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### The Ethnobotany of Chinchero, an Andean Community in Southern Peru

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TIMOTHY PLOWMAN  
1944–1989

We dedicate this volume  
with love and gratitude  
to Tim Plowman,  
who brought us all together  
and showed us the way



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## Preface

The goal of the Chinchero ethnobotanical project was to document, from an interdisciplinary perspective bridging botany and anthropology, the flora of a human community whose boundaries are political and cultural as well as geographic. The project developed from the long-term research in this town in the high Peruvian Andes of two of us (C.F., E.F.) which began with an exploration of the cognitive and practical worlds of Andean weavers (C. Franquemont & E. Franquemont, op. cit.). During a long period of association with Chinchero, we worked with members of the community in support of a range of projects, including cultivation of potatoes, laying of pipes for a potable water system, and activities of the school and the soccer league; in 1980 we took two *cargos* (sponsored the participation of two dance groups) for the town's annual celebration of the patron saint (Spanish, *fiesta patronal*).

Two problems illustrate our (C.F., E.F.) motivations in studying the ethnobotany of Chinchero. A specific question arose in conversations with Chinchero weavers. The town is home to one of the community-specific textile traditions that characterize the Cusco area (C. Franquemont, 1979, 1986; E. Franquemont & C. Franquemont, 1986, 1987). Like many other researchers, we wanted to understand the meaning of the woven designs. Since the designs had names, an obvious place to start was to translate those names. Several of the *pallay* (Quechua, 'design') names were said also to be the names of plants. One plant, *chili chili*, was particularly common; we were told that it grows "right around here anywhere," always followed by, "well, I don't see one right now, but . . ." Five years later when we undertook a complete survey of the plants of Chinchero, we still did not know which plant was *chili chili*. We were curious—was the design, an elaborated zig-zag, a picture of the plant, or a symbol for a sacred or valuable plant? In a sense, this work was undertaken to answer the question of the meaning of a category named *chili chili* and of many other categories as well. Those comparisons between plants and weaving designs were in themselves a question in taxonomy (C. Franquemont, 1986). *Chili chili*, in fact, is the name given to at least five plant species: Three are *Geranium* species, the fourth, an *Anemone*, and the fifth, a *Hydrocotyle*. All share an ornamentally scalloped leaf form, as does the central motif in the woven design.

Between 1979 and 1982 we (C.F., E.F.) worked

with Chinchero residents to establish a center for traditional culture located in Chinchero (C. Franquemont, 1982), a living museum designed to speak for traditional Quechua life in dialogue with the Spanish-speaking school system oriented to coastal culture. Segments of the project were dedicated to agricultural systems, textiles, fiestas, music, storytelling, and finally, plants. In 1982 we began a survey of the flora of the community of Chinchero as an extension of the ongoing work toward cultural preservation. It was clear that low esteem for traditional knowledge of the environment was working to put the people of Chinchero at a disadvantage with their more technologically advanced compatriots in a number of ways. First, prestigious wheat (in bread) and rice, both expensive imported commodities, were replacing locally grown foods such as *quinua* and even potatoes in the Quechua diet. Second, farmers' need for cash and the consumption patterns of the larger regional economy caused changes in agricultural strategies. Large areas of land were being planted to barley rather than Andean tubers, since the Cusco beer factory provided seed and guaranteed purchase of harvests. Farmers were restricting the diversity of their potato crops, in some cases influenced by government agricultural programs. Many farmers sought short-term gains in ignoring the traditional seven-year rotation system, relying on chemical fertilizers to maintain productivity. Third, the awe of modern medical technology such as injections and pills—progressive and lifesaving in some situations—was devaluing the daily practice of herbal medicine long used to maintain the health of the community. These examples suggest the urgency that the authors and the people of Chinchero saw at that time in documenting the local knowledge of plants.

One of us (T.P.) volunteered to coordinate the considerable botanical aspect of the project, and three of us (S.K., W.D., C.S.) agreed to collaborate as field botanists. Funding was secured through Earthwatch, Inc. With this team of six researchers, 19 energetic Earthwatch volunteers in two groups, and the residents of Chinchero with whom we had worked to create the cultural center, we were able in 1982 to complete an extensive survey of Chinchero flora.

Another year of fieldwork by one of us (C.F.) in Chinchero in 1985–1986 continued the ethnobotanical survey directing study specifically to the logic of Quechua plant classification (C. Franquemont, 1987).





# The Ethnobotany of Chinchero, an Andean Community in Southern Peru

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## Abstract

An ethnobotanical study was conducted in Chinchero, Peru. The political district of Chinchero has an area of more than 135 sq km at altitudes between 3000 and 5000 m; the community's 18,000 residents form a cultural unit. A floristic survey was undertaken in 1982 as part of an ongoing ethnographic project on Chinchero culture. The methodologies of anthropologists and botanists were combined to elicit a complete understanding of the relationship of Quechua people and plants in this Andean environment. The study identified at least 507 plant species in 319 genera in 112 families, equivalent to more than 250 Quechua categories. For each species, the following information is provided: Latin binomial, geographic distribution, locality, habitat, local names, and ethnographic information. Even as Chinchero undergoes rapid acculturation, individuals maintain knowledge of plants' characters and uses in all aspects of daily life. We encountered 14 New World and 17 Old World species cultivated as food, tea, medicine, shelter, and commodities. In addition, both wild and cultivated plants play vital roles in ritual, myth, design, and local ecology. The results of this unique multidisciplinary research will be of use to a broad range of scholars.

## Introduction

Ethnobotany has been an ill-defined discipline without an established methodology. The definition of ethnobotany remains problematic, since its first use in 1895 by Harshberger to refer to the study of "plants used by primitive and aboriginal people ..." (Ford, 1978, p. 33) and its more recent redefinition by Ford as "concerned with the to-

talinity of the place of plants in a culture and the *direct* interaction by the people with the plants" (Ford, 1978, p. 44). The form of an ethnobotanical study depends on its author's identification as cognitive anthropologist, botanist, archaeologist, or ecological or physical anthropologist, among others. Frequently, studies by one group are not useful or even intelligible to another. Many studies have concentrated on economics and utility, with an underlying theme of usefulness to our own society, but frequently ignoring the conscious or collective activities of people. Alternatively, the anthropological study of semantic domains, of naming systems, has been done by anthropologists, who often ignore the natural world in which those human activities take place.

The goal of research in Chinchero was to document, from this interdisciplinary perspective, the flora of a human community whose boundaries are political and cultural as well as geographic. Our work succeeds the remarkable ethnobotanical surveys of Berlin et al. (1974), *Principles of Tzeltal Plant Classification*, and Alcorn (1984), *Huastec Mayan Ethnobotany*, and follows the presentation used by Vickers and Plowman (1984). Ultimate inspiration came from the New World ethnobotanical studies of Richard Evans Schultes. In Chinchero, we attempted a collaboration between disciplines in a study which kept in mind the purposes and methods of both botany and anthropology. By providing a reporting format and a specific methodology for ethnobotanical plant collection and botanically relevant ethnography, the study tried to satisfy the goals of ethnobotany, to illuminate the human and cultural complexities of people's relationships with plants, in a work where both people and plants are visible.

The thousands of voucher specimens in the Chinchero collection represent at least 507 plant species in 319 plant genera in 112 plant families and some 250 local categories. Specimens come from nine communities of Chinchero between the altitudes of 3000 and 5000 m. Forty-two species are plants of Old World origin, one is from Australia, and the remaining species are native to the New World. The majority of species is limited in present distribution to the Andes. By our estimate, the collection represents 95% of the flowering plant species growing in Chinchero, including several species new to science, a number of plants never before reported from Peru, and a large number of plants collected for the first time from the Cusco area. Detailed ethnographic information accompanies virtually every plant specimen. The collection is the most comprehensive ethnobotanical survey ever done in the central Andes.

A variety of specialists have devoted their work to the ethnobotany of the Andean highlands, including ancient plant use (Towle, 1961). Both early priests (particularly Cobo) and the great European geographic expeditions (Ruiz and Pavón, Raimondi) took an interest in the broad range of cultivated and utilized plants they encountered (Herrera, 1937). Valdizán and Maldonado, Peruvian physicians, published a detailed work, *La Medicina Popular Peruana*, in 1922. The authors, in the nationalism of their era, sought to document the indigenous (Inca) roots of medical science in Peru; they were drawn to *curanderos* (Sp., 'healers') whom they saw as medical specialists like themselves. *Medicina Popular* includes an inventory of hundreds of Peruvian plants, identified to species and in some cases illustrated, and their uses.

Macbride began publishing the encyclopedic *Flora of Peru* in 1936, and by that time the prolific scholar Herrera had also begun his extensive documentation of the botany and ethnobotany of Peru, *Sinopsis de la Flora de Cusco* (1941), and numerous articles in the *Revista del Museo Nacional* (1933a,b, 1938, 1939, 1940a,b, 1942). Yacovleff and Herrera's work (1934–1935) on plant representation in ancient Peruvian art remains the standard.

Lira (1946), a Spanish priest working in Cusco, documented the uses of plants as medicines and as ritual paraphernalia; however, Lira did not identify plants by scientific name, severely limiting the usefulness of the work. Soukup (1970), also a priest, compiled a vocabulary of the local and scientific names of Peruvian plants from specimens

in Peruvian herbaria as well as from colonial and modern references, especially the *Flora of Peru* (Macbride, 1936 et seq.) Soukup's book is a source of a great deal of comparative information, with emphasis on highland and coastal plants. The data was rather uncritically assembled, however, and the book is cumbersome to use and limited by lack of information on the areas of Peru in which species occur.

More recently, a careful but unpublished study by Fisher (1976) was based on work in a pseudonymous highland village in the Department of Cusco. She identified more than 100 locally important plant species and gave the plants' local and scientific names, along with use information she collected from oral and written sources and pharmacopoeias. Brunel's dissertation (1975), also unpublished, analyzed the variation in plant classification in Chacan, a former hacienda bordering Chinchero. The work of the late Louis Girault on the healing inventory of the Kallawayas, a group of ritual and herbal healing specialists in Bolivia, is extremely well documented, but directed specifically at the Kallawayas pharmacopoeia (Girault, 1984). For Bolivia an extensive study by Cárdenas (1969) and a more superficial survey by Bastien (1982) document current plant use and herbal medicine; treatment of particular plants is well represented by the work of Carter (1978, 1980) on coca.

A number of authors have described the complexity of Andean agricultural systems, notably Leon (1964), Mayer (1974), Gade (1975), Brush (1977), Brush et al. (1981), Bristol (1968), and Orlove and Godoy (1986). Ongoing large-scale efforts will add a great deal to this knowledge, notably those in Cuyo Cuyo (Puno) led by Bruce Winterhalder and in the Department of Cusco continuing the work of the late César Fonseca. Johns and Towers (1981) and Johns and Keen (1986) explored the frontier between wild and cultivated plants.

## Chinchero: The Setting, an Andean Town

Many people know Chinchero (fig. 1) as a small town near the city of Cusco in southern Peru with extensive Inca ruins and a colorful Sunday market (fig. 2). Each year, thousands of tourists visit Chinchero; most stay less than two hours. They do not realize that Chinchero is a political district



Explanation of photo credits: CCTC—Chinchero Center for Traditional Culture, a photographic archive maintained by C. and E. Franquemont; S.K.—Steven King; W.D.—Wade Davis; C.S.—Calvin Sperling.

FIG. 1. The town of Chinchero, built on Inca ruins (photo CCTC).

comprising 135 sq km of hills and plain, ranging between 3100 and 5000 m in altitude, and a culture area with some 18,000 residents. Since anthropologist Oscar Nuñez del Prado first worked there (Nuñez del Prado, 1949), a large number of cultural anthropologists and archaeologists have done research in Chinchero for varying lengths of time, much of which is, unfortunately, unpublished. Contreras's (1985) recent ethnography and Alcina Franch's (1976) report on the archaeology are the most substantial results yet published from this work.

Chinchero is located in the province of Urubamba, approximately 15 km northwest of the city of Cusco, and shares a border with the province of Cusco. The town center is 25 km from Cusco by paved road, and approximately 10 km from the town of Urubamba. Because Chinchero is at high altitude (3810 m at the town plaza) in a tropical latitude ( $13^{\circ}17'S$ ), it has a climate of extreme contrasts between wet and dry seasons of the year and between hot days and cold nights. From May through September, dry, cold, and often windy

weather brings night temperatures at times below freezing, and intensely sunny days which may be as warm as 85°F. In striking contrast, during the wet season (October–April), frequent thunderstorms and rainy spells lasting as long as a week turn the land green and muddy, with temperatures more even, fluctuating between 45°F. and 60°F. An average yearly rain of approximately 840 mm falls almost entirely within these months. Measurements made in Chinchero between 1955 and 1961 (Freeman, 1963, quoted in Contreras, 1985) correspond to Tosi's classification of the area as very humid forest, having approximately 1,000 mm of rain per year (Tosi, 1960).

Chinchero remains fundamentally an agricultural community. The agricultural year has four stages: the sowing season before the onset of the heaviest rains (September–November), the rainy growing season (December–March), the season of plowing the fields to be planted the following year (April) (fig. 3), and the harvest season (May–June). Three seasons are locally designated: dry (Qu., *chaki*), May to the beginning of August; wind time



FIG. 2. Every Sunday Chinchero is the site of a barter and commercial market (photo W.D.).

(Qu.-Sp., *wayratiempo*), from August to November; and flowering time (Qu.-Sp., *tikaytiempo*), from December through April (Contreras, 1985). During the dry, windy months of June, July, and August, agricultural activities are limited to household-based work, including freeze-drying potatoes (Qu., *chuñu*) and other tubers, making and repairing tools, and any left-over sod-turning (Qu., *yapuy*; Sp., *barbicho*).

The physiography of Chinchero is of two types (map, fig. 4). The western area, a high rolling plain (Qu., *pampa*) at 3800 m, once formed the bed of a Pleistocene lake; to the east the lake bed is bounded by low limestone hills, rising into a series of steep granitic ridges that reach an elevation of 4600 m. Water remains in the lowest parts of the plain in the form of bogs, seasonal ponds, and two large lakes, while in the hills to the east, trapped water emerges from several reliable springs. The largest of these springs, Qorqor, is the current source of water for the city of Cusco. A large lake (Qu., *qucha*) called Piuray drains to the southeast toward Cusco; another called Huaypo drains to the Uru-

bamba River. (Although this river is properly called the Vilcanota, to avoid confusion, we refer to it as do Chinchero residents as the Urubamba, the name it takes at a lower altitude.) The Incas and later the Spanish took advantage of this water resource to build a series of canals (and later aqueducts) which carried those waters to Cusco (Sherbondy, 1982).

A deep water cut (Qu., *wayq'u*; Sp., *quebrada*) separating the western plain and eastern ridges of the Chinchero area drains the plain into the valley of the Urubamba river some 800 m below (fig. 5). The plain is intensively cultivated for Andean tubers and European grains, while the ridges serve for pasture or sparse tuber cultivation, and a few small fields at the very lowest part of the *quebrada*, approximately 3100 m, allow maize agriculture. A large area of high-altitude land above approximately 4000 m (Qu., *puna*), which cannot be used for cultivation, supports herding.

While the plain (Qu., *pampa*) is relatively uniform in character throughout Chinchero, the water cut harbors a special environment called *qhishwa*



FIG. 3. Two teams of three men plow with *chakitaqlla* (Andean footplow) in field above Lake Piuray (photo CCTC).

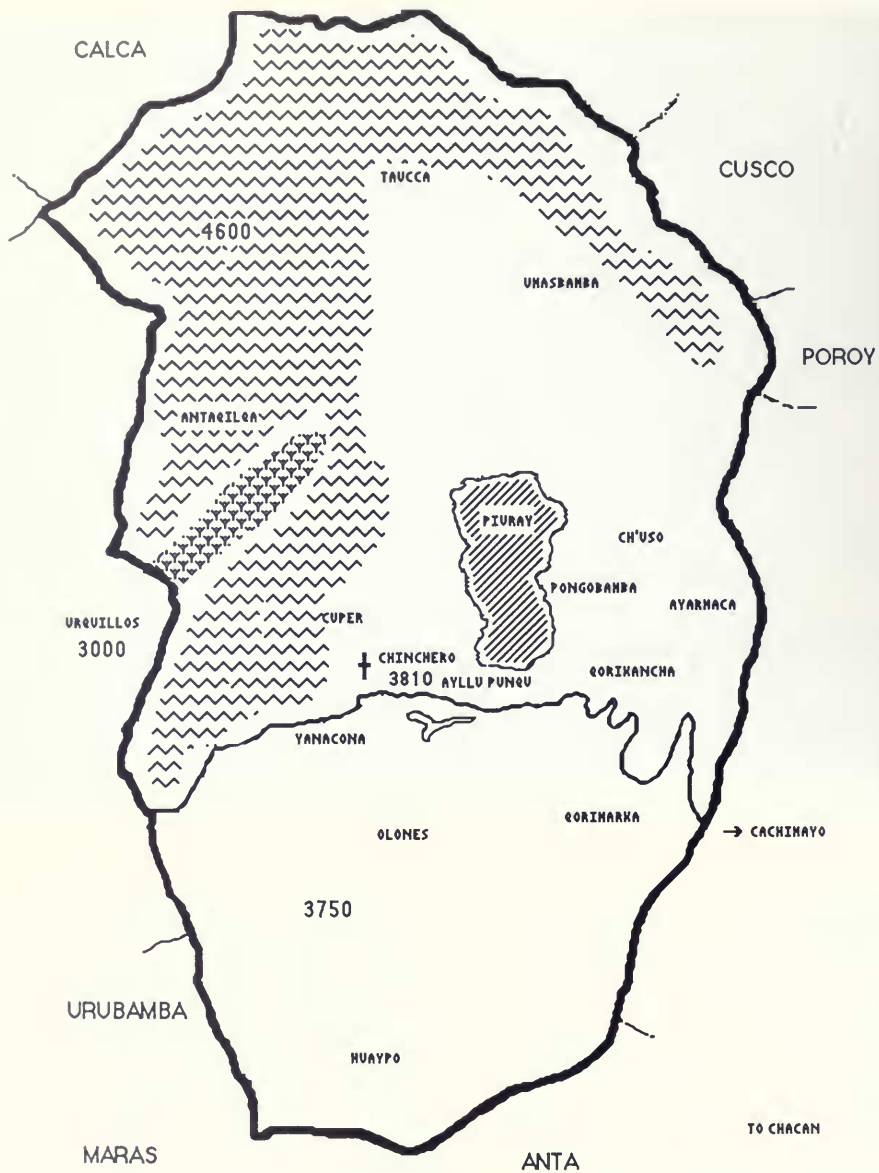
(Qu.). Between the approximate altitudes of 3100 and 3600 m, trapped moisture and heat allow the growth of a dense flora including plants larger in size than higher-altitude members of the same species. The hillsides above (Qu., *urqu*), especially on the eastern side where they are moister and better protected from wind, support the few remaining indigenous trees in the area (*Polylepis*, *Buddleja*, and others). Most of the wide range of wild plants known and used by Chinchero people grow on these slopes in the *qhishwa* and above.

We do not know when people first moved into the plain that is now Chinchero; the earliest published archaeological remains date from the Killke period immediately prior to the Incas. By Inca times Chinchero was a well-established focus of human activity, as evidenced by extensive remains of architecture and landscape modification (Alcina Franch, 1976). Large-scale terracing and walls of dressed limestone built in the tightly fitted polygonal style attributed to the Inca Period (ca. A.D. 1438–1532) provide the evidence of a large site with apparently administrative and ritual functions (Rowe, 1946; Niles, 1987). Chinchero

was the location of Topa Inca Yupanqui's royal estate (Niles, 1987; Alcina Franch, 1976).

The two major *ayllus* of Chinchero, Cuper and Ayllupunqu (*ayllu* 'door' or 'gateway'), existed in Inca times, and people occasionally still refer to Cuper as *hanan ayllu* (Qu., 'upper community') and to Ayllupunqu and Yanacona together as *hurin ayllu* (Qu., 'lower community'). In this description we use the word *ayllu* interchangeably with community (Sp., *comunidad*) to refer specifically to these recognized land-holding groups. Although in some cases this use is historically inaccurate, because the definition of *ayllu* is complex and has varied considerably, we continue to use the word to imply the unity and strength, stemming from a common cultural identity, of these groups of people. When the Spanish arrived (ca. 1533), each of these *ayllus* occupied a distinct hamlet between which lay the large area of Inca structures and terraces just mentioned.

Manco Inca burned the structures in Chinchero on his retreat from Cusco in about 1540, shortly after the Spanish Conquest (Alcina Franch, 1976, p. 147). By 1608 the Spanish had converted the



NORTH ←

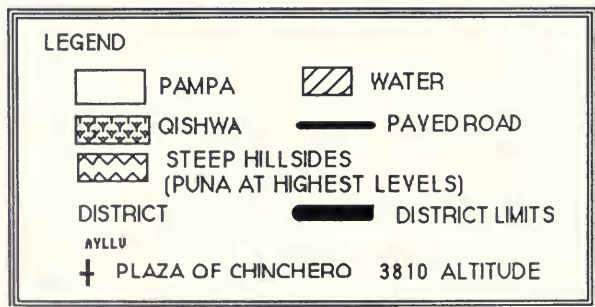


FIG. 4. Map of Chinchero, showing location of zones and communities.



FIG. 5. A river cut divides the western plains and the eastern hills of Chinchero. Waqkhata, on the near side, is a sector especially suited to growing grains; beyond are the lower slopes of Antakillqa hillside, used primarily for pasture and gathering (photo W.D.).

largest Inca building into a Catholic church. As required by the Spanish policy of reduction (Sp., *reducción*), the surrounding *ayllus* relocated to form the town that today surrounds the church. At that time several haciendas controlled large areas and numbers of people in Chinchero (Toledo, 1974; Alcina Franch, 1976). Just as the local Church was founded on ruins of Inca design, the modern communities represent the remains of Inca social structure, the *ayllu*.

Today the approximately 18,000 residents of Chinchero comprise a cultural group that both residents and outsiders identify by ethnic markers that include dress. They live in a total of 13 self-governing, land-owning communities that retain individual identities extending to agricultural practices and plant systematics. Chinchero was legally recognized in 1905 as an independent political district of the Federal Republic of Peru (Montalvo, 1965). The district of Chinchero should not, however, be thought of as a purely externally imposed political unit, because it follows existing cul-

tural boundaries recognized by both residents and outsiders.

Three lines of power and bureaucracy tie Chinchero to the national government: a governor (Sp., *gobernador*) named by provincial or departmental authorities, a mayor (Sp., *alcalde*) and council (Sp., *concejo*) now elected by town residents, and a judge (Sp., *juez de paz*) empowered to decide some local disputes between individuals (Contreras, 1985). These offices, which (with the exception of the judge) conduct their affairs in Spanish, were rotated until the 1960s among a few *mestizo* (Sp., 'non-Indian native') residents.

Chinchero center has been declared a legal Urban Zone (Sp., *Zona Urbana*). As of 1986 some 300 households cluster around the church and along the paved highway where the three primary *ayllus* of Cuper, Ayllupunqu, and Yanacona meet. Another 15,000 people live dispersed or in smaller hamlets on the hills of Chinchero. Residences are gradually concentrating around the town center which is the site of the church, primary and sec-



FIG. 6. A *minkha* labor group, assembled for the day, rests after harvesting potatoes (photo CCTC).

ondary schools, a plaza with a large Sunday market of barter for produce and sale to tourists, and Inca ruins. Houses are also agglomerating along the paved road which links Chinchero in a tourist circuit with Urubamba, Ollantaytambo, and Pisac. The major demographic trend in Chinchero, however, is out-migration to Quillabamba, Cusco, and Lima, while national culture in the form of language, dress, music, and money flows steadily into Chinchero.

Belying Chinchero's proximity to the city of Cusco, its inhabitants have a justified reputation for stubborn conservatism in thought, traditions, and institutions. Curiously, the residents of Chinchero also enjoyed this reputation of contrariness in early Colonial times (Sarmiento, 1907 [1572]) and in fact may have been a non-Inca ethnic group at that time, the Ayarmaca (Rostrowski, 1970). During Tupaq Amaru's rebellion in the 18th century, the people of Chinchero allied themselves with the Spanish under the leadership of a *cacique* (Spanish-recognized native leader), Mateo Pumacahua (Valcárcel Esparza, 1977). As recently as 10 years ago, their way of life still centered upon tuber agriculture, animal husbandry,

and textile production; the number of Chinchero people conversant in Spanish was small. Dress and weaving style are the most visible defining characters of the area. Many women still wear the multiple braids and handmade clothes that distinguish them from women of other Quechua-speaking communities. In the past 40 years, men have abandoned completely the traditional style of village-specific dress in favor of identity as part of an area-wide class of rural workers, and many women are also doing so. Cultural traits specific to Chinchero (or other Quechua communities), however, are by no means limited to clothing style. They extend into nuances of language use, technology, ritual life, and folklore, making the Cusco area a mosaic of local cultures united through shared economies, language, beliefs, and history.

Residents of Chinchero define their fundamental identity as members of one of the self-governing land-owning communities of Chinchero: Cuper, Yanacona, Ayllupunqu and others (see map, fig. 4). These communities survive from pre-Columbian social groups (Qu., *ayllus*) and in some cases from colonial annexes (Sp., *anejos*), outposts (Sp., *estancias*), and ranches (Sp., *haciendas*). The





FIG. 7. Potato fields are hoed twice during the growing season. Members of an *ayni* group work together in a lifelong relationship of labor exchange (photo C.S.).

government of Peru now officially recognizes the *ayllus* as independent entities; Umasbamba was the first to be recognized as an independent indigenous community in 1927 (Contreras, 1985). Each community has a distinct geographical definition, although all lands are not always contiguous. A high level of envy (Sp., *envidia*) among and between *ayllus* can be observed in the humorous nicknames they invent for each other: Yanacona is Yana Qhuña ('black snot'), Cuper is Waqcha Cuper ('impoverished' or 'orphaned Cuper'), and Ayllupunqu is Kullu Papa Suqsuq (because their potatoes are so small they have to be swallowed whole).

*Ayllu* members (Qu., *ayllu masi*, now more commonly called by the Spanish equivalent, *comuneros*) have rights to work the usufruct they own on lands within the *ayllu*, and also obligations. They must attend their *ayllu's* meetings (Sp., *asamblea*) and participate in a labor tax (Sp., *faena*) with which the *ayllu* maintains trails, roads, public buildings or a community business venture. Community members may work usufruct they own

within the boundaries of another *ayllu* if granted permission by that *ayllu's* meeting, in exchange for contributing money or collaborating with the labor tax. They may also participate in that *ayllu's* meetings, but do not have voting rights, which are reserved for residents.

Men have basic responsibility for agricultural organization and labor, although women help in the fields as needed and throughout the harvest season. Women also support agricultural activity through a parallel organization of intensive mutual hospitality. People seldom work alone, but rather form into groups based on any of several labor-sharing institutions. *Ayni*, the most common form of agricultural labor, is built of reciprocal labor exchange in which each worker is repaid by the owner of a field with a comparable day of labor. *Minkha* workers are compensated in some way by the end of the work day and do not receive exchanged labor from the owner (fig. 6). *Faena* is a labor tax which group members vote upon themselves for the common good. *Minkha* groups generally involve four or five workers, *ayni* commonly

assembles 10 or 12, while *faena* may mobilize hundreds of people in common enterprise. *Ayni* labor is a regular part of daily life during the plowing season (April), the harvest season (May–June), and the sowing season (September–November) (figs. 7–8).

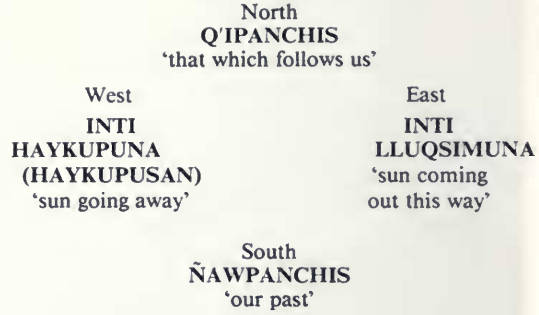
As in most Andean communities, people are changing. Through the growth of the tourist industry and increasing control over the profits from their produce and labor, they have been brought into the cash economy, even as farming becomes an increasingly unproductive activity. Traditional strategies, whereby planting was governed within each *ayllu* by sophisticated systems of crop rotation (Qu., *muuyuy*) through sectoral fallowing (Qu., *mañay* ‘sector’), are now breaking down under increased demand for cash crops. Low prices for agricultural products have also hurt farming and, in combination with the lure of work in the city, have discouraged many workers. Two other recent events have caused severe depletion of the agricultural economic base in Chinchero: (1) the completion in 1983 of a paved road passing from Cusco through Chinchero to Urubamba, and (2) the appearance of parasitic liver flukes (*Fasciola hepatica*) among sheep and camelid herds.

On the new paved road, the city of Cusco is only a half hour’s drive away. With virtually all children now attending school, most people in the central communities are now bilingual Spanish and Quechua speakers. In this process of change, many of the institutions and systems that have evolved gradually since pre-Columbian times are now disappearing. Like the condor and other large birds which are no longer seen in the skies over Chinchero, the last ritual specialist (Qu., *altumisayuaq*) is dead. Some traditional rituals persist only as subjects of reminiscence. As communities like Chinchero rise together to join an emerging pan-Andean culture that is beginning to make a place for itself in the international world, the distinct parts of the Andean mosaic are losing definition.

## Local Geography

For the people of Chinchero, plants mark and are marked by an ecology they know and use intimately. The local view of environmental zones is determined by altitude and understood through plant and animal inhabitants and agricultural potential. They know the plant world in relation to the zones and feature of their local geography.

Chinchero sits at the intersection of four cardinal directions (see map, fig. 9).



Within the boundaries of Chinchero, the paths that people travel take them throughout the range of plant habitats, from corn fields at 3100 m to windy mountaintops at 4600 m. Quechua people define several broad ecological zones that are remembered in identifying plant categories: *puna*, *pampa*, and *qhishwa*. *Puna*, the high area above the tree line, occurs only in the communities of Cuper and Taucsa in lands above 4000 m. A diversity of high-altitude grasses collectively referred to as *ichu* characterize the lower part of this zone, including *Brachypodium mexicanum*, *Calamagrostis glacialis*, *Festuca dolichophylla*, *Festuca sublimis*, *Nasella* aff. *linearifolia*, *Nasella pubiflora*, and *Stipa ichu*. Camelids prefer these grass species as forage, but few camelids remain today on the slopes of Chinchero. Weberbauer (1945, p. 366) sets the lower limits of the *puna* in central and southern Peru as 3800–4000 m, giving as a general definition “that elevated region where agriculture becomes impossible.” Cusco area farmers do cultivate tubers within the *puna* zone by planting specialized cultivars, *ch'iri papas*, and by using a specialized technology called *ch'uiqi*, the practice of planting and cultivating tubers within holes dug in unplowed sod.

The highest lands are blanketed by “cushion plants” such as *Aciachne acicularis* and small clustered groups of low-growing, high-altitude forms of brightly flowered genera such as *Nototriche*, *Viola*, and *Werneria*. The ground here bounces underneath your feet as you walk. At high altitudes, many unrelated kinds of plants grow in this “cushion” growth form, which functions as protection from winds and frosts. Flowers with particularly large and intensely colored corollas characterize alpine floras. Although Weberbauer (1945, p. 387) found these flowers infrequent in the high Andes, several Chinchero residents pointed out to us the large and unusually colored flowers of such genera



FIG. 8. An *ayni* group works together to construct a new house (photo CCTC).

as *Nototriche* and *Gentianella* as characteristic of the *puna*. Weberbauer also noted these species, but considered them atypical.

A single but immense expanse of *pampa*, flat and open land, occupies most of the area of the *ayllu* Yanacana and extends to the flat areas of fields surrounding Lakes Huaypo and Piuray (fig. 10). The *pampa* in Chinchero, at a constant altitude between 3750 and 3800 m, can be cultivated with modern technology, the lands plowed with oxen or even tractors, and the harvests collected by trucks with access to a paved road to Cusco. *Pampa* lands are cultivated entirely, so that their original vegetation is gone. They are now characterized by European agricultural weeds and the encouraged edible plant *Brassica campestris*, grasses (e.g., *Festuca sublimis*), and rushes (*Juncus* spp.). Water lying above or just below the ground of the old lake bed is extremely alkaline. People do not consider the *pampa* to be as fertile as the hillside lands of Cuper, and the pressures of cash cropping have caused the rotation system dictating four or more years of fallow to break down. Many farmers on the *pampa* now plant every year, count-

ing on artificial fertilizers to make up for the lack of fallow, but acknowledging that it does not.

A small *qhishwa*, or warm zone, lies between 3100 and 3600 m in the canyon to the east of town, below the spots where the waters spring out of the hillside at Puqpuq and Chaqchaq'illay. These waters irrigate Chinchero's few maize fields and then flow another kilometer into the Urubamba River. Although this is the only area of Chinchero where maize can be grown, that fact alone does not define the zone, since most of the *qhishwa* territory is too steep for cultivation of any kind. These isolated fields within the lands of the town of Urquillos were recently won in a lawsuit by the community of Cuper and are cultivated by different elected members of the community of Cuper each year. The large-kerneled white maize grown best in the Urubamba Valley is an extremely valuable export crop (Grobman et al., 1961). Residents of Chinchero without access to these fields reserve a portion of their potato harvest to make *ch'uñu* specifically to trade for maize grown in the Urubamba Valley.

The two-hour walk from Chinchero center to



FIG. 9. Schematic map of Chinchero.

Urquillos, on the Urubamba River, goes through this *qhishwa* zone. Before the completion of a paved road to the town of Urubamba in 1983 made possible rapid access by vehicle, Urquillos was the closest point in the Urubamba Valley. A long history of close connection exists between the two communities; a 16th-century document noted that Urquillos included an "ayllu Chinchero" of 50 Indians (Villanueva U., 1982, p. 17). Hundreds of Chincheros attend the annual fiesta of Urquillos on March 8, especially important for the healing mud baths which take place in the church. Urquillos residents in turn bring produce by mule to trade or sell in the Chinchero Sunday market: condiments, flowers, lettuce, hot peppers, and what they are most appreciated for, huge baskets of *capulí* (*Prunus serotina* ssp. *capulí*), packed in the large leaves of *q'armatu* (*Nicotiana tomentosa*).

Leaving the plaza of Chinchero, people walk to the bottom of the Inca ruins along a narrow path (formerly an Inca trail), through the area called Simayuq (formerly the location of dense *sima* grass), past the rock outcrop Chinkana ('maze') and the stone in the brook called Qhillu machaqwayniyuq ('with a yellow snake'), to Wayraq

Punku ('Wind's Door'). There, as at many spots on Andean paths, one has the definite sensation of going around a corner. At such spots the Incas often built an actual doorway, like those outposts at Ollantaytambo and Machu Picchu. As the toponym suggests, the door is opened to the winds from the valley, which are warmer and more gentle and make a less harsh sound than the winds that blow across the plain.

Past Wayraq Punku the path drops off sharply, crossing the stream to turn another corner at Qinti Capilla ('Hummingbird Chapel'), where Chincheros pause to rest, chew coca, or make a small offering. From this spot the Urubamba Valley can be surveyed. Hummingbirds and raucous groups of small green parakeets (Sp., *loros*) fly; the plant growth becomes lusher and more fragrant. *Niwa* (*Cortaderia* sp.) grows well above head-height, and startlingly beautiful passion-flowers (*Passiflora pinnatistipula*, 'grenadillas') and other vines tangle with shrubs. This is the *qhishwa*.

Much of Chinchero is not *puna*, *pampa*, *qhishwa*, or *qucha* ('lake'). Large areas of sloped hillside, *khata* and steeper *urqu*, serve for potato cultivation and subsequent rotations of tubers, legumes,



FIG. 10. Mountain is reflected in a pond on the pampa of Yanacona (photo CCTC).

and grains and for herding. Like Puqpuq and Chaqchaq'illay, the water sources already mentioned, many features in this landscape are important landmarks. A number of kinds of features also designate kinds of plants, as do the zones *puna*, *pampa*, and *qhishwa*. Among these are seepage (Qu., *ch'aran*), running water (Qu., *mayu*), hill (Qu., *urqu*), fallow (Qu., *purun*), rock (Qu., *qaqa*), lake or standing water (Qu., *qucha*), and the more general earth (Qu., *pacha*).

Because the locations in which plants grow are crucial keys to their identification, so landmarks also mark plant organisms in both name and conceptual identity. Quechua people know what plants "should" grow in a given place, what plants to expect to be there, because of their repeated familiarity with all of the places in their world. They relate plants not just to a kind of environment, but to a specific place (e.g., Titiqaqa Wayq'u, Incaq Mallkin Pampa), based on their personal cognitive map of their own *ayllu*. (Because *ayllus* are land-based groups, the word refers both to the lands and to the social group associated with those lands.) When we talked with someone about any particular plant, referred to by name or as a dried

specimen, that person very often told us where it grew, e.g., above Puqpuq waterfall, or at Titiqaqa. She said, "I know where you got that," and was right.

Judgments of *ayllu*-specific geography affect plant knowledge. Frequently, a person from Cuper did not recognize a plant from Taucca, or a Cuper resident looking at a specimen of the plant *tiqllay warmi* (*Senecio erosus*) from the *puna* above Taucca commented that it grew on Antakillqa, a comparable environment within her own *ayllu*. People from Yanacona, which has no *puna*, often did not recognize *puna* plants at all, unless they had very large herds and pastured them in the common grazing lands on Antakillqa. (Ordinarily, people pasture animals in the fallow fields [Qu., *purun*] of their own community.)

Plant names are common in Chinchero toponyms, where the plants mark places in the landscape. Residents said that the plants named grew in those spots, statements we were able to confirm in some cases. People told us that Q'erapata, the name of a small annex to the north of Chinchero center, referred to a past environment. Formerly during fallow years, the hillsides were white with

the pale flowers of the weedy plant *q'ira* (*Astragalus garbancillo*). Now that a number of residences have been built, and fields of grains planted year after year as cash crops have replaced the centuries-old tradition of crop rotation by sectoral fallowing (Qu., *mañayes*), the *q'ira* meadow no longer blooms.

## Methods

Our work in Chinchero in 1982 established a basic methodology for ethnobotanical fieldwork, which we continue to use. We followed the well-established botanical methodology for collecting herbarium specimens as outlined, among others, by the United States Department of Agriculture (1971), augmented by systematic collection of the related ethnographic information necessary to make that collection meaningful to us.

The original research team that collected the flora included both botanists with experience in plant collection techniques (W.D., S.K., C.S.) and anthropologists with a background of participant observation and informal interviews (C.F., E.F.). In general, while botanists and anthropologists initially had limited experience in fieldwork in the other disciplines, all had a demonstrated commitment to interdisciplinary study (King, 1982; Davis & Yost, 1983). The entire Chinchero project team together planned a group strategy for accomplishing a goal toward which all members of the group would then work. As the study progressed, the field team diminished in size, but still sought to fulfill the various original aims of the work.

We collected plants within the boundaries of the community of Chinchero (lat. 13°23–25'S, long. 72°0–5'W). Botanists organized a laboratory, and 19 able and energetic volunteers recruited by Earthwatch, Inc., assisted us in the various tasks of gathering, processing, and organizing the plant collection.

We were able to collect most plants during the height of the rainy season (January–March). The majority of plants in the survey came from the community of Cuper, which is the most environmentally diverse community of Chinchero, with lands ranging in altitude from 3100 to 4600 m, and also the community of which two of us (C.F., E.F.) are members.

Our collection procedure was designed to allow coordination of the activities of our diverse team and standardization of the data gathered by all members. We collected specimens with one to five

duplicates of each numbered "kind" of plant in separate plastic bags. In nearly all cases, these "kinds" were, in fact, plant species. In addition we made a photographic record of most plants. Temporary numbers given at the time of collection made possible the coordination of separate notes by anthropologists, botanists, and photographers; we assigned permanent numbers to plants in the laboratory before pressing. Botanists kept daily notebooks, using temporary numbers to refer to plant specimens, recording date, personnel, place, specimen number, family and genus if known, habitat, and description of characters of the plant likely not to be present in the herbarium specimen, such as size, color, and smell. We pressed plants in numbered folded sheets of newspaper, stacked alternately with sheets of felted blotting paper and cardboard corrugates, and tightly strapped between wooden press-ends. We laid presses on a wooden box containing an electric heating source to dry for a day or more, as needed. We stored dried specimens in cardboard boxes for use in interviews and ultimate distribution to herbaria in Peru and the United States. In accordance with requirements of the Ministry of Agriculture of Peru, we left duplicate collections of specimens with the Museo de Historia Natural "Javier Prado" (Universidad Nacional Mayor de San Marcos) in Lima and with the herbarium of the Universidad Nacional San Antonio Abad del Cusco. All other specimens were shipped to Field Museum of Natural History in Chicago for identification and further distribution under the direction of two of us (T.P., C.N.).

Porter (1959, p. 42) comments that "the ultimate goal of collecting in the field and preserving in the herbarium is very simple: ... to preserve for all time a series of specimens and notes that will yield the maximum of information about the plants concerned." The accomplishment of this goal, however, is in no way simple. Which are the plants "concerned"? What are the various kinds of information, and from which sources are they to be taken? How extensive should notes be? For whom are we preserving the data?

Even the researcher with a clearly defined methodology for collecting plants and preserving them still faces questions on stepping outside the laboratory, beginning with: Who will go along? In this study, each daily collection group included an anthropologist, a botanist, a local plant user, and one or more Earthwatch volunteers who assisted in collecting duplicate specimens, photographing plants, and taking notes. Several Chinchero resi-



FIG. 11. Puququ waterfall is never visited by people who avoid *sirena* (Sp.), the malignant female spirit present there (photo S.K.).

dents worked as paid assistants to the project, and many others volunteered their help (see Acknowledgments). Both anthropologists (C.F., E.F.) spoke English, Spanish, and Quechua; botanists (W.D., S.K., C.S.) spoke English and Spanish; local people spoke Quechua and sometimes Spanish.

In Chinchero, the mandate to conduct a broad survey of the flora of an autodefined culture area

corresponding to a political province did not obviate the necessity of a daily decision: Which direction should be taken? We selected a direction and destination for each collection team toward the goal of surveying the widest possible range of environmental zones, human communities (*ayllus*), and human activities. We targeted, for example, places such as a "herding area at the sum-



FIG. 12. Mother and daughter peel potatoes in house courtyard. Note dooryard plantings of useful herbs, *chivanway*, *Stenomesson* spp. (ornamental), *ruda*, *Ruta graveolens* (ritual/medicinal), and *llanten* (*Plantago major*) (used for tea) (photo C.S.).

mit of the highest mountain,” “potato fields surrounding a large lake,” “waterfall avoided by humans” (fig. 11), or “weedy dooryards.”

Frequently, we took time to evaluate our progress toward this goal along the paths of plant collection. We recognized that botanists and anthropologists alike often tend to search for and value the exotic. For instance, in our enthusiasm we first explored the most difficult environments of Chinchero; for example, the top of the highest hill and an isolated waterfall, with the result that,

later in the study, we had to allot several days to collecting weeds from paths and dooryards in the center of town. These common and weedy plants were important in documenting the place of plants in Quechua life. Two ready examples are *markhu* (*Ambrosia arborescens*) and *muthuy* (*Senna versicolor*), both of which have a variety of uses (fig. 12). Some of the extremely common plants from Chinchero were difficult for botanists to identify, that is, *kiku* (*Bidens andicola*), *llawlli* (*Barnadesia* spp.), and *lumu lumu* (*Hypseocharis bilobata*),



which was said by botanists to be limited in geographic distribution to the Department of Cusco.

Our goal on each excursion was to collect every kind of plant not previously collected. Botanists generally made the judgment of what constituted a "kind" of plant, thinking of "kinds" as species. We collected and noted unnamed or "useless" plants as well as those said to be useful. We included sterile specimens of ethnographic interest, even though they might be difficult for botanists to identify. *Maransiras*, for example, is an edible wild plant which is said never to flower. The sterile specimens of plants in this Chinchero category may represent one or even two new species, although identification awaits the collection of flowers.

We collected again any plant which informants called to our attention as particularly useful or interesting, as well as plants given names we had not heard before. These repeated collections helped us link previously recorded information with the plant species ultimately determined. Quechua plant names show a high degree of variability, which takes several forms. First, people give the same name to different plants; for example, people call both *Hypoxis decumbens*, an amaryllid, and *Anthericum eccremorrhizum*, a lily, *kuchi kuchi* (Qu., 'pig pig'). Second, different people give different names to the same plant; for example, on encountering the shrub *Nicotiana tomentosa*, one person called it *q'armatu* while another called it *paya paya qhura*. Third, names change according to context; for example, adults call *Fuchsia apetala* by the name *chhilin campanilla* (Qu., *chhilin* is an onomatopoeia for the sound of a bell; Sp., *campanilla* 'little bell'), while shepherd children may call it *frutilla frutilla* (Qu. from Sp., 'strawberry strawberry'). Because of such variation, we had to regard information acquired without reference to a plant specimen as indefinite hearsay.

We tied our information to the potential sources of varying knowledge by collecting repeated voucher specimens and by noting the location and context of encounter and the identity of the informant. In practice we were occasionally willing to bend this rule because of the extraordinary memories of Quechua people for their natural environment. Frequently, when we brought home a plant, a passerby would correctly tell us the exact spot where we had collected it. Three years later field assistants remembered the plants we had collected, their locations, and even the weather and events of that day. For instance, if a person told us without prompting that we must be referring

to a plant that we had collected underneath an eagle-shaped rock just above the waterfall, and she was right, we were willing to treat her information as if we were looking at the plant together.

We segregated some fresh plant specimens for use in ethnographic interviews in the laboratory, so that each plant might be examined by a variety of local people including men and women, young and old. Although we also conducted interviews using dried specimens, people sometimes felt less comfortable identifying dried plants. Quechua people can identify a growing plant more readily than a dried specimen, which may have lost important clues of smell, color, or form, even though people are used to seeing dried plants that have been bought or collected and are kept for use as medicines or cures (Qu., *hampi*).

Ethnographers kept daily notebooks, using the same temporary numbers as botanists to refer to plant specimens. These field notebooks contained a record of date, personnel, place, and local names and uses. We took extensive notes on conversations with people about these plants, noting the identity of informants and a range of comments, which often included name, preferred habitat, variations, and utility. We also recorded negative responses. As noted above, local people participated in every plant-collecting excursion. In addition, we talked about the plants we found with people we encountered, then asked other community members to spend time in further interviews in the laboratory. We tried informally to get a cross section of points of view by sex, age, and residence. We formed an admitted bias for consultants who were culturally conservative, based on our experience that people who were more fully bilingual and acculturated to Cusco life simply did not know very much about plants, had limited interest in them, and were frequently unable to comment.

Ethnographers recorded localities in the form of specific toponyms. While these local place names do not appear on maps, anyone who goes to that area and asks for a place by name can be led directly to it, since Quechua people name every feature of their topography: fields, hills, passes, springs, and places with a view. We included longitude and latitude on plant labels for precision.

In a sense, each discipline (field botany and ethnography) taught a lesson in systematic collection and recording of data. Specific skills included collecting whole plants and identifying individual speakers, paying attention to plant habitats and to social contexts, and a great deal of useful descrip-

tive and functional terminology. While ethnography has no apparent standardized methodology, and no comforting details of size of paper and nature of equipment, our work is not unsystematic. We learned and practiced the delicate art of asking questions naive enough to avoid prompting answers, without betraying such ignorance as to encourage ridicule and hidden obscenity. All participants in our study learned that a plant could have many uses and even names, so that no individual was to be believed or disbelieved.

This study refers to some four years of fieldwork in Chinchero over a 10-year period. Such depth of ethnographic experience, and the power that experience holds to enlighten every context of encounter with plants, changes the endeavor of ethnobotany. The experiences, actions, and statements of known people provide the constant frame for discussion. As ethnobotanists working in an agricultural society, we had an advantage over many other scientists because people were as interested in plants as we were and were happy to discuss the subject at length. We can better appreciate the meaning of those words and actions because our ethnographic information is linked to plant specimens.

In any ethnographic study, the questions asked and the responses given are interdependent. The process of shaping questions is comparable to the use of a pre-questionnaire and subsequent questionnaire by some social scientists. Because anthropologists are particularly aware of the extent to which both sides influence one another, they are able to continue realizing and refining the questions at issue in their particular study. An example from our work in Chinchero illustrates this process. When we first began discussing with people the plants we found, we were particularly interested in eliciting their comments on the names and uses of those plants. As we talked, we found that people routinely volunteered the locations where a particular plant grew, information which at that time did not interest us. These strings of toponyms were downright unwelcome: We could not spell them, we did not know where they were, we could not write fast enough to catch them all, and they crowded more interesting information out of our notebooks. However, since we had begun this work with the ethnographic premise that the entire range of people's comments about a plant should be recorded, we struggled to write them down. We soon realized, of course, that Chinchero people were telling us that where plants grow is a critical element in their understanding

of them. In fact, the association of plants with places is the essential mnemonic tool which allows Chinchero people to maintain a complex and intricate body of environmental knowledge, and the logic of those associations is a major classifying device (C. Franquemont, 1987).

We recorded negative responses as well. Many times, when we asked someone the name of a plant, the answer was something we rendered as "name unknown." The actual response might have been, "I don't know," "I can't remember," or a shrug. Rarely did people tell us, "That plant has no name."; very rarely, "I've never seen that plant before in my life."; and on one occasion, "That's not a plant" (in reference to a powdery white lichen, *Diploschistes* sp.) We found that plants which are not of interest to people provide negative evidence of the concerns addressed by their system of classification (Franquemont, 1987). Of course, some instances may be evidence of the imperfection of any individual's memory, since no one can recall on demand everything they ever knew. Roughly one out of 12 responses fell into this "name unknown" category. Disproportionate numbers of these cases were cryptogams or aquatic plants, or plants not collected within that individual's *ayllu*, confirming a pattern of *ayllu*-specific knowledge (C. Franquemont, 1987).

As summarized earlier, the Chinchero plant collection contains 836 numbered plant specimens with several thousand duplicates, representing 502 plant species in 311 plant genera in 112 plant families and some 250 Quechua categories. Although this statement is accurate, it should not be taken as a quantitative profile of the complex and idiosyncratic realm of Chinchero plant life, but rather as an indication of the scale of information analyzed. Together with the ethnographic notes assembled at the time of collection and in a subsequent year of fieldwork, this large corpus of information was transferred into a computerized data base. The original file, containing information taken directly from field notebooks, was used to sort and create specialized files to which summary categories could be added. We (T.P., C.N.) prepared a book of machine copy reductions of Field Museum's mounted set of the plant specimens, which then served as a very useful guide to the collection, particularly during subsequent field trips.

The Chinchero ethnobotanical project differs from previous studies in the extensive nature of plant collection, the methods of plant collection with extensive supporting ethnographic documen-

tation, and the reference to that collection at later stages of analysis. The Chinchero collection differs from most ethnobotanical collections because we collected noneconomic, nonmedicinal, and unnamed plants as well as named useful ones; we made repeated collections; we collected any ethnographic information people were willing to give us rather than concentrating on a few specific questions. In addition, we not only attributed information to specific informants, but subsequently continued to consider the ethnobotany of Chinchero as comprised of highly individual knowledge. This broad approach led to the realization of the importance of place names, reminiscence, and nostalgia (Franquemont, 1987).

## Cultivated Plants in Chinchero

The cultivated plant species collected in Chinchero include unique Andean cultigens that exhibit specialized adaptations to high-altitude environments. Only one of these cultigens, the potato, has achieved worldwide importance. These nutritious food crops, the result of artificial selection by Andean people, include the tubers *Solanum tuberosum* (Qu., *papa*), *Ullucus tuberosus* (Sp., *lisas*), *Oxalis tuberosa* (Qu., *oca*), and *Tropaeolum tuberosum* (Qu., *añu*); the pseudocereal *Chenopodium quinoa* (Qu., *quinua*); the root crops *Arracacia xanthorrhiza* (Qu., *rakhacha*) and *Canna × indica* (Qu., *achira*; edible part a rhizome); and the legume *Lupinus mutabilis* (Qu., *tarwi*). The nutritional value of these cultigens is receiving new attention (King & Gershoff, 1987), although indigenous Andean people have enjoyed them as part of their yearly diet for millennia.

Many of these crops contain secondary compounds (Johns & Towers, 1981) and must be detoxified before they are eaten. *Lupinus mutabilis* (Qu., *tarwi*) contains high levels of quinolizidine alkaloids (King, 1988) which are removed in the process of soaking, boiling, and further soaking used in Chinchero. Tubers and leaves of *Oxalis tuberosa* (Qu., *oca*) contain varying levels of calcium oxalate. Tubers are processed by being left in the sun for two or three days to a week, depending on individual taste, as they are said to get sweeter with each day of exposure. *Tropaeolum tuberosum* contains glucosinilates that release volatile mustard oils (isothiocyanates) when cooked (Johns & Towers, 1981). Chinchero people treat *Tropaeolum* tubers so that they will "taste good." Tubers must be left in the sun for two days if dug

up at harvest time (in June) or for two weeks if dug up earlier in the year.

Equally interesting are the processes for turning fresh vegetables into foodstuffs that are commonly stored for periods as long as 10 years and uncommonly for 20. These procedures provided the continual surplus of food which was the basis of the Inca Empire (Rowe, 1946). Potatoes go through stages of productive rotting: *tapura*, tubers which are rotten when dug up or soon after, are boiled and eaten in soup; *kachi ch'uñu*, squishy tubers which have been frozen but not dried, are boiled and eaten with salt and, if possible, cheese; and *ch'uñu*, shrunken, desiccated tubers which have been repeatedly frozen, stomped, and sun-bleached, are soaked, boiled, and eaten in soups and stews at any time from one to many years after they have been harvested. This preservation strategy is only possible in the extreme climate of the high Andes, although city residents sometimes duplicate the first stage by putting potatoes in their freezer overnight in imitation of *kachi ch'uñu*.

Alternatively, potatoes are leached in pools of water for a period of days and then dried to produce white, mealy tubers called *moraya* (Qu.), which also last for years. *Lisas* (*Ullucus tuberosus*) and *oca* (*Oxalis tuberosa*) are processed in the same way as *ch'uñu* for long-term storage, making *llinlli* (Qu.) and *khaya* (Qu.), respectively. Although these freeze-dried tubers—far smaller and lighter than fresh tubers—are stored in enormous baskets for later trade or use, they will not be consumed by insects, bacteria, or rats.

The community of Chinchero is known throughout the southern Peruvian Andes for growing potatoes both on a large scale and with particular expertise. The *pampa* of Chinchero may have been the site of specialized potato production as long ago as Inca times, so that the nearby Inca sites of Moray and Machu Qulqa were constructed for the purposes of industrial processing and storage of tubers (E. Franquemont, 1983). More recently, Chinchero has been a source of new potato varieties for the southern Peruvian Andes. Most notably, Eugenio Aucapuma created the widely popular cultivar *Papa Olones* through artificial selection of tubers he produced by planting the seeds of selected potato fruits (Qu., *ambarqutu*).

Potatoes and, in lesser quantities, other tubers are eaten in a variety of ways. Most commonly, which is twice a day in most households in Chinchero, boiled potatoes are eaten in soups seasoned with condiments such as *muña* (*Minthostachys glabrescens*). Plates or cloths of boiled potatoes are



FIG. 13. An *ayni* group accomplishes first hoeing of potato field with attendant ritual (January) (photo W.D.).

offered as accompaniment to every meal. Families who can afford cooking oil also eat fried potatoes occasionally, but most people dislike the improved varieties of white potatoes because they are useful only for frying.

Although estimates of the number of varieties of potatoes known to Quechua people go as high as 1,000, Brush's statement that "the average farmer growing these varieties can name about thirty-five types" is consistent with our observations in Chinchero (Brush et al., 1981).

The traditional potato cultivars in Chinchero include examples of ecological adaptation, functional and technological specialization, and the application of the aesthetics of taste, texture, and color. Many Chincheros were unable to identify potato varieties from growing plants by such characters as flower color, leaf shape and wrinkling, or habit, but instead dug up a few tubers. For the same reason, botanists are unable to identify sub-specific or cultivar categories on the basis of herbarium or specimens alone. Au.Q. was among the few people we encountered who was able to identify

varieties from plants in his own fields, where of course he knew what mix of seeds he had planted.

Potatoes are generally grown according to one of two regimes. A small number of fields that are irrigable (Qu., *maway*) may be planted as early as August for harvest in January–February. The foliage is still green at *maway* harvest and is used for fodder, and *Brassica campestris* is encouraged within the fields to be eaten as a green (figs. 13–14). The great bulk of Chinchero potatoes (Qu., *hatun tarpuy* 'great planting') are planted in non-irrigable fields at the outset of the rainy season in October–November and are harvested in May–June when the foliage has died and the ground is dry (fig. 15). These potatoes are hoed and hilled twice, once with attendant ritual (fig. 16).

*Chiri papas* are specialized for cultivation in cold areas and are grown in Chinchero only in the high *puna* areas of Taucra and Umasbamba. Plants are quite short in stature and withstand frosts; tubers are small and not very tasty, so that Chincheros reserve them for *ch'uñu*. Two other potato cultivars are grown exclusively for *ch'uñu*: *yana*



FIG. 14. Harvest of *maway* (irrigated) fields is done by first cutting the still-green tops of the potato plants with a sickle; then pulling up stalks and removing attached tubers. Quantities of *Brassica campestris*, eaten as greens, are allowed to grow in potato fields (photo CCTC).

*wanya*, also called *asul wanya* (Qu., *yana* 'black'; Sp., *asul* 'blue'), and *cuchillo p'aki* ('knife-breaker'; from Sp., *cuchillo* 'knife' and Qu., *p'aki* 'to break'), which has large reddish tubers which are said to be so hard that they break knives.

Since virtually all of the land in Chinchero is too high in elevation to grow maize (*Zea mays*), Chinchero people reserve a part of their potato harvest in the form of tubers or *ch'uñu* (Qu.) to trade for maize with their neighbors in the Urubamba Valley, where maize is the primary agricultural product.

When asked directly to name the source of a potato cultivar, farmers' answers formed two poles: potatoes were said to be either "from long ago" (Sp., *antiguo*) and frequently "from the family," or else from the Ministry of Agriculture. In longer conversations, farmers recognized many paths from the national government into their fields, including *hacienda* labor paid in potatoes and the Cusco market as well as direct distribution of seed tubers by government agencies, but they continued to mark cultivars as either "ours" or "theirs."

*Mariba*, *yana mariba*, *yana bole*, *renacimiento*, *mi Perú*, *tomasa condemayta*, and *cusqueña* were identified as Ministry of Agriculture potatoes. Of these, only *papa cusqueña* was said to be worth eating, and it was said to be quite good and to withstand boiling as well as frying. Chinchero farmers grow other "improved" varieties for sale; they require the use of fertilizer and insecticide and are profitable only for a few farmers with large areas of flat *pampa* land.

In 1986 growing potatoes was not profitable for anyone due to the low price set by the government, a price which nonetheless was higher than that of potatoes abroad. This fact coupled with the lack of an infrastructure for national distribution of agricultural produce resulted in government import from abroad of large quantities of potatoes for sale in cities.

The ideal of the potato in Chinchero is *qumpis*, with tubers which are evenly round, clear in color, and mealy in texture. These potatoes are the best to eat, are the most attractive, and go for the highest price if sold. They can be used for any purpose,



FIG. 15. Tops of plants from *maway* (irrigated field) are useful as fodder (photo CCTC).

although they are not ordinarily made into *ch'uñu* because they have a high value, and other varieties are specialized for that purpose. The most highly valued quality in a cooked potato is a mealy texture called in the literature *arenoso* (Sp., 'sandy') or *harinoso* (Sp., 'floury'). Both adjectives are correct translations of the Quechua phrase, *aquyuq*, used to describe them. Although potato varieties are said to be specialized for several methods of preparation, including baking in an earth-clod oven (*wathiya*) and frying, the most highly regarded potatoes are those that can be boiled (Qu., *wayq'u*).

Several specimens of feral, unused *Solanum tuberosum*, collected along trails at 3800 m., are known as *atuq papa* (Qu., 'fox's potatoes'), as is one specimen of *Solanum acaule*. All indigenous cultigens are acknowledged by Chinchero people to have wild counterparts, but most cultigens of Old World origin such as fava beans and barley are not. Wild potato varieties are classed variously as *k'ita*, *atuq*, and *intiq* or *killaq*. These names characterize plants in a sequence of social domains along a continuum from civilized to uncivilized. The first, *k'ita*, are feral, or tame-gone-wild. Potatoes which are said to be *atuq*, or to belong to

the fox, are thought to be wild, asocial, and uncivilized, to be quite useless. *Intiq* or *killaq papas* are not *Solanum* species, but rather *Peperomia* species having tiny perfectly round tubers, and so they can be said to be potatoes in the domain of the sun or moon, a parallel but entirely distinct social realm, that of supernatural society.

There have been reports that indigenous peoples eat wild tubers (e.g., Correll, 1962, for Mexico and the North American Southwest); people in Chinchero acknowledge the possibility of eating wild tubers, but view it as an uncivilized thing to do. They frequently maintain that, although "others" who live in poorer or more marginal areas of Chinchero eat such foods as wild *Solanum* tubers, they themselves do not. For example, Cuper residents suggested that people living in the former *hacienda* Araqay at the eastern edge of Chinchero ate *araq* potatoes, giving *k'ita* as a synonym for *araq*; however, people commonly eat the greens of a number of plants primarily cultivated for tubers or grains, including potatoes, *lisas*, *quinua*, and *rhakhacha*.

Two cultigens not ordinarily grown at high altitude, *Canna × indica* and *Arracacia xanthor-*



FIG. 16. A woman adds to a pile of potatoes being harvested by a group of people working in *minkha*. Portions of the day's harvest will be distributed among the workers of the day (photo CCTC).

*rhiza*, were cultivated experimentally in Chinchero. L.P. planted *achira* and *rakhacha* in his relatively low and warm maize field at 3100 m as an experiment to determine whether he could grow them in Chinchero. His interest in planting a wide range of cultigens was challenged by these lowland crops. Ultimately, he decided that, while not impossible, it was not worth the effort, particularly since neither food is considered particularly desirable. *Achira* (Gade, 1966) is not normally eaten in Chinchero, although people are familiar with the vegetable, which is served throughout the streets of Cusco during the fiesta of Corpus Christi in May on plates of *ch'iri uchu* (Qu., 'cold' 'hot pepper'). Many agriculturalists like L.P. engage in constant experimentation, bringing wild plants home to their courtyards and planting odd seeds given to them. In 1986 several farmers experimented by planting seeds of *Amaranthus caudatus* (Qu., *kiwicha*), a plant actively promoted by the García government. The farmers found that *kiwicha* did not grow well in altitudes as high as those of Chinchero, and they had limited interest in the grain since no one knew how to prepare it. The farmers denied hear-

ing of the plant before the recent publicity, although in the early 1970s (Plowman, pers. comm.; Gade, 1975), it was reported to have grown in Ollantaytambo about 40 km from Chinchero.

In spite of the highly specialized and successful nature of Chinchero agriculture, we found that people also consumed a wide variety of wild plants. Such plants have frequently been characterized in botanical reports as "famine food," but we learned in Chinchero that preferences led people to include wild plants as a significant element of their daily diet, even when they had abundant food resources from cultivation (table 1). People know exactly where these plants can be found; they are occasionally protected or even transplanted nearer to households. The use of these plants should be regarded as ongoing experimentation and potential domestication activity, and so we include these wild plants in our discussion of "cultivated plants."

Use of wild plants for diet is summarized in Table 1: raw vegetables (5 species), masticants (3 species), cooked greens or roots (11 species), condiments (10 species), fruits (3 species), and snack foods (25 species). In addition, more than 40 species

TABLE 1. Wild plants used in Chinchero diet.

Local name	Latin name	Use
<b>UNCOOKED VEGETABLES</b>		
k'ita achuqcha	<i>Cyclanthera brachybotrys</i>	Fresh fruits in salads
llakhi or k'ita aselgas	<i>Rumex crispus</i>	Young tender leaves in salads
maransiras	Compositae indet.	Fresh leaves in sauce
murmuntu or llullucha	<i>Nostoc commune</i>	Fresh algae, has tonic qualities
uqururu	<i>Mimulus glabratus</i>	Fresh leaves in salads
<b>YOUNG LEAVES AS COOKED GREENS</b>		
phuytu or k'ita quinua	<i>Chenopodium quinoa</i> ssp. <i>milleanum</i>	...
llullu	<i>Brassica campestris</i>	...
mayu mostazilla	<i>Nasturtium officinale</i>	...
lakhi or k'ita aselgas	<i>Rumex crispus</i>	...
k'ita or puna rakhacha	<i>Arracacia peruviana</i>	(Young leaves and stems)
<b>COOKED VEGETABLES</b>		
phuya phuya	<i>Nothoscordum andicola</i>	Roots boiled and chopped like onions
frutilla	<i>Hydrocotyle urbaniana</i>	Root boiled and its 'fruit' eaten
oka qupisun	<i>Calandrinia acaulis</i>	Root peeled, sunned, cooked
khallampa	<i>Morchella</i> spp.	Fungi replaces meat in main dishes
quncha	<i>Pleurocollybia</i> spp.	Fungi in hot sauces of main dishes
llullucha	<i>Nostoc commune</i>	Algae cooked in stews
<b>CONDIMENTS</b>		
khuñuqa	<i>Satureja boliviana</i>	Foliage in sopa de ch'uñu
chiqchipa	<i>Tagetes multiflora</i>	
payqu	<i>Gomphrena elegans</i> , <i>Iresine celosia</i> , <i>Chenopodium ambrosioides</i>	...
molle	<i>Schinus molle</i>	...
maransiras	Compositae indet.	...
mostaza	<i>Brassica</i> sp.	Seeds
muña	<i>Minthostachys glabrescens</i>	Leaves
puna colander	<i>Daucus montanus</i>	Leaves in hot sauce
puna colander	<i>Oreomyrrhis andicola</i>	Leaves can substitute for cilantro in hot sauce, other foods
qhitu qhitu	<i>Gamochoeta spicata</i>	Ground with flour of <i>Vicia fava</i>
<b>SNACK FOODS*</b>		
ramos ramos	<i>Bomarea</i> spp.	Stem and fruits
achanqharas	<i>Begonia clarkii</i>	Juice and epidermis of leaves
tintin	<i>Passiflora mixta</i>	Fruit
capulí	<i>Prunus serotina</i> ssp. <i>capuli</i>	Fruits
chiqchi	<i>Berberis cliffortioides</i>	Fruits
wayq'untuy	<i>Tillandsia oroyensis</i>	Accumulated water
k'aqlla	Cactaceae sp.	Fruit
aña panqu	Cactaceae sp.	Fruit
pampa anis	<i>Vilobia praetermissa</i>	Foliage
leche leche	<i>Ipomoea minima</i>	Tuber
luraypu	<i>Echeveria</i> cf. <i>peruviana</i>	Leaves chewed to alleviate thirst
ch'uilkus	<i>Oxalis peduncularis</i> var. <i>pilosa</i>	Stem and leaves chewed
chhilin campanilla	<i>Fuchsia apetala</i>	Fruits
frutilla frutilla		
k'ita frutilla	<i>Fragaria vesca</i>	Fruits
granadillas	<i>Passiflora pinnatistipula</i>	Fruits
kiyawcha	<i>Epidendrum</i> cf. <i>densifolium</i>	Juice of stem
	<i>Oncidium</i> cf. <i>aureum</i>	Pseudobulbs for thirst
trago trago	<i>Oxalis peduncularis</i>	Juice from stem and leaves
	<i>Oxalis steinbachii</i>	Stem and leaves, juice from flower
	<i>Oxalis</i> sp.	Root
	<i>Castilleja pumila</i>	Nectar from flowers
tintincha	<i>Passiflora gracilens</i>	Fruit, called k'ita trombos
macha macha	<i>Kakeneckia lanceolata</i>	Berries; also intoxicating
anis	<i>Ribes brachybotrys</i>	Chew plant



TABLE 1. Continued.

Local name	Latin name	Use
SNACK FOODS (CONTINUED)		
macha macha	<i>Ribes brachybotrys</i>	Eat berries
awilmantu	<i>Saracha herrerae</i>	Fruit, called puka ruru
piris piris	<i>Salpichroa gayi</i>	Fruit
aqy kaqka	<i>Pilea serpyllacea</i>	Raw fruit
LEAVES CHEWED "LIKE COCA"		
pampa anis	<i>Vilobia praetermissa</i>	Leaves
pawituscha	<i>Vicia andicola</i>	Leaves and stem
inca coca	<i>Polypodium spp.</i>	Leaves

\* Eaten raw by shepherds (especially children) and others who frequent the areas where these plants grow.

of wild plants are gathered and systematically used raw in tonic drinks or prepared into teas, ingested both to maintain daily health and to treat special problems. Neither Quechua people nor nutritionists accept a clear-cut division between the two supposed functional categories, medicinal and nutritious. Of course, some cases are clear: *ñuñunqa* (*Euphorbia pepus*) is a violent purge and would never be consumed under normal circumstances. Many teas and drinks, however, are chosen for their general healthful attributes; for example, as tonics; as particularly appropriate to morning or evening consumption; or as agents of hot or cold needed to balance an individual's constitution.

A useful tree which is encouraged to grow near households is *qiswar* (Qu.), *Buddleja* spp. This formerly common native tree is appreciated for its wood, its colorful orange flowers, and the protection it offers from sun and wind. The chroniclers of the Colonial period say that the Cusco area was continuously forested at the time of the Spanish Conquest with native species such as *Buddleja* and *Polylepis* (Qu., *qiuña*). Today, these native trees exist only in a few sheltered remnants of cloud forest and as individual trees where protected by people. Cutting for use of the wood as fuel as well as climatic change have hastened the demise of these plants; and conversely, large-scale deforestation has contributed to the increasing dryness of sierra lands.

Informal experimentation is carried out constantly by people who pick up plants in the wild and bring them home to grow next to their houses. This activity is best represented in the Chinchero collections by the plants from the late A.H.'s house garden (K100-K113) (fig. 17). Along with condiments and ornamentals cultivated for use and sale, such as *wakatay* (*Tagetes terniflora*), *ruda* (*Ruta*

*graveolens*), and *chiwanway* (*Stenomesson variegatum*), Don A. had transplanted from Antakilla hillside several wild plants—*negro uman* (*Eryngium weberbaueri*), *qalaywala* (*Polypodium angustifolia*), and *urqu phalcha* (*Halenia weddelliana*)—and was nurturing them as potential courtyard plants. On the wall of his courtyard, L.P. was still tending vines of *Boussingaultia diffusa* that he said had been transplanted there by his grandfather. The thick, juicy leaves of this plant are useful to L.P., who grinds them to make a poultice which is applied to the cheek for tooth problems. L.P.'s son, G.P., is now growing *maransiras* (unidentified species), a wild herb used as a condiment, next to his house in response to our interest in the plant and repeated questioning of his assertion that it never flowers. (It did not flower between 6 Sept. 1986 and 26 July 1987; when we visited G.P. in July 1988, he told us that one of his plants had indeed produced a white, "pilli-like" flower several months earlier.) These anecdotes are examples of the activity of all Chinchero people who travel on a daily and yearly basis throughout their varied ecology.

Gade (1972a) has suggested that Andean people's use of the common European field weed *Brassica campestris* as an edible green is an example of incipient agricultural practice, active encouragement of the growth of a camp-following weed that could eventually become a cultigen.

Over the past 450 years, a number of Old World crops have been integrated into Andean agriculture to varying degrees (table 2). None of them is a tuber; the major European changes in tuber farming in the Andes have been plowing with oxen and a feudal land tenure system, changes that have been felt more in Chinchero in the flat *ayllu* Yanacóna than on the slopes of Cuper. European grains are grown as much for cash crops as for con-



FIG. 17. A.H. and his wife pose in front of his household garden of herbs and ornamentals raised for use, sale, and curiosity (K101-K111) (photo S.K.).

sumption, and they are broadcast, cut, stoked, and threshed and winnowed in European style. It is interesting that *quinoa*, an Andean pseudo-cereal, is treated in much the same way (although threshed by hand in small quantities rather than with oxen).

Fava beans figure in the daily diet of all people in Chinchero. The fava bean (Sp., *habas*, *Vicia faba* L.) is an introduced crop plant in the Andes,

probably native to Southwest Asia. The bean is a staple food widely planted and eaten in Chinchero and sometimes sold. The beans are boiled and eaten fresh, or dried, then toasted (Sp., *tostado*) or boiled to make *phuspa* (Qu.), favored portable foods. *Habas* are planted after the first heavy rain in November, harvested in May. Five cultivars were collected in Chinchero under cultivation on the plain surrounding Lake Piuray at 3800 m. Three

TABLE 2. Chinchero cultigens.

Local name	English name	Latin name	Part used	Special preparation	Origin
<b>ANDEAN CROPS</b>					
papa (Qu.)	...	<i>Solanum tuberosum</i>	Tuber	Fresh, stored, frozen, freeze-dried, or water-processed	...
lilas (Sp.)	...	<i>Ullucus tuberosus</i>	Tuber	...	...
añu (Qu.)	...	<i>Tropaeolum tuberosum</i>	Tuber	Sunned	...
quinoa (Qu.)	...	<i>Chenopodium quinoa</i>	Grain	Washed	...
rakhacha (Qu.)	...	<i>Arracacia xanthorrhiza</i>	Root	...	...
achira (Qu.)	...	<i>Canna × indica</i>	...	...	...
tarwi (Qu.)	...	<i>Lupinus mutabilis</i>	Seeds	Boiled, leached	...
<b>INTRODUCED CROPS</b>					
avena (Sp.)	Oats	<i>Avena sativa</i>	Grain	...	Old World
cebada (Sp.)	Barley	<i>Hordeum vulgare</i>	Grain	...	Old World
trigo (Sp.)	Wheat	<i>Triticum aestivum</i>	Grain	...	Old World
albergas, Sp. arvejas	Peas	<i>Pisum sativum</i>	Seeds	...	Old World
hawas, Sp. habas	Fava beans	<i>Vicia faba</i>	Seeds	...	Old World
Qu., llullu; Sp., nabos	Rape	<i>Brassica campestris</i>	Greens	...	Old World
sara (Qu.)	Maize	<i>Zea mays</i>	Grain	...	Mexico
eucalyptus (Sp.)	Eucalyptus	<i>Eucalyptus globulus</i>	Wood, leaves	...	Australia

Individuals also occasionally cultivate radishes, carrots, lettuce, and onions on a very small scale.

were designated by color: *habas blancas* (Sp., *blanca* 'white,' in reference to its light-colored stems and fruits); *puka habas* (Qu., *puka* 'red,' in reference to its dark reddish stems and fruits); and *q'umir habas* (Qu., *q'umir* 'green,' again in reference to the green color of stems and fruits). Flowers of all three cultivars were white. A fourth cultivar, *puquchun habas* (Qu., *puquchun* 'ripen!'), was said to produce a greater quantity of large seeds. The fifth, *paluqu habas* (Qu.) had plants shorter in stature than most other varieties, but were not otherwise remarked by farmers.

The Old World pea, *Pisum sativum* (Qu., *alwirha*, from Sp., *arveja*), an introduced crop plant native to Europe or the Near East, is cultivated in small quantities in Chinchero for occasional consumption in soups and stews. Two varieties of *albergas* (from the Sp., *arvejas*), like those of *habas*, were collected, *blancas* (Sp., 'white') and *rojas* (Sp., 'red'), cultivated in small plots among fields of *habas* on the flat plain surrounding Lake Piuray at 3800 m. *Albergas blancas*, which had white flowers, were said to have larger seeds and to be more prolific than *albergas rojas*, which had red flowers. Although the variety *albergas blancas* was said to be newer, the seed for both came from locally kept family seed stocks.

Chinchero farmers increasingly plant the introduced grains: oats (*Avena sativa*) for animal fodder, wheat (*Triticum aestivum*) for occasional human consumption in thick soup (Qu., *lawa*) (fig. 18), and especially barley (*Hordeum vulgare*) for sale to the Cerveza Cusqueña brewery in Cusco.

Four species collected were cultivated for their fruit: *trombos* (fruits of *Passiflora mixta*), *manzana* 'apple' (*Malus sylvestris*, Eurasian origin), *durazno* 'peach' (*Prunus persica*, Chinese origin), and *capulí*, (*Prunus serotina* ssp. *capuli*, native of Mexico and Central America, cultivated and escaped). Although enterprising individuals (frequently children) collect these fruits in season and take them to markets for sale, they do not have any significant economic importance. Adults rarely eat them, generally viewing them as unhealthy, even life-threatening, foods.

Most of the many plants cultivated as condiments or teas are of Old World origin (table 3). These species are cultivated in small household gardens for personal use, gifts to neighbors, and sale in the Sunday market. The fact that so many of the species are European suggests that these gardens follow the model of the European herb garden.

The agricultural resources of this and other An-



FIG. 18. A *ch'asti*, an adolescent role in dance groups and fiestas, cleans wheat. Wheat, an Old World grain less suited to high altitudes, is increasingly replacing Andean grains such as *quinua* as a prestige food (photo S.K.).

dean communities have evolved over 5,000 years of experimentation, acquisition, and keen observation. Through this process, new cultivars (defined genetically and perceptually) have been developed, acquired, and maintained by the people of Chinchero according to their perceived needs and interests. In the course of this process, many plants have changed; genetic material has been

added and lost. Recent dependence upon cash economies and improved varieties developed by national sources have no doubt eroded the genetic pool available to Chinchero farmers. Despite this erosion, farmers will continue to bring their intelligence and creativity to solve their immediate problems through manipulation of the plant world in which they live.

TABLE 3. Minor cultivated plants.

Local name	Latin name	Use	Origin
<b>CONDIMENTS OR TEAS</b>			
manzanilla	<i>Matricaria recutita</i>	Flowers used to make tea	Eurasia
wakatay	<i>Tagetes terniflora</i>	Leaves used as condiment in soups and other dishes, to stuff cui (Qu., 'guinea pigs') before roasting	Andes
santa mayra	<i>Tanacetum parthenium</i>	Used for tea	Balkan Peninsula
ahinhus	<i>Artemisia absinthium</i>	Used for tea	Eurasia
culandro	<i>Coriandrum sativum</i>	Foliage used as ubiquitous condiment in cooked and uncooked dishes	Mediterranean
hinojo	<i>Foeniculum vulgare</i>	Herbage used for tea	Mediterranean
llantén	<i>Plantago major</i>	Leaves used for medicinal tea	Old World
phanti	<i>Cosmos peucedanifolius</i>	Entire plant as medicinal tea	Andes
<b>ORNAMENTALS</b>			
chiwanway	<i>Stenomesson</i> spp.	...	Andes
qantu	<i>Cantua buxifolia</i>	...	Andes
sira ñuqchu	<i>Salvia dombeyi</i>	...	Andes
tintin	<i>Passiflora mixta</i>	...	Andes
cartucho	<i>Penstemon gentianooides</i>	...	Mexico
puka t'ika	<i>Dahlia pinnata</i>	...	Mexico
clavel	<i>Dianthus barbatus</i>	...	Old World
uchu k'aspa	<i>Calendula officinalis</i>	...	Old World

## Explanation of Format

### Species Information

The following list of plants is arranged alphabetically by family, and within families, by genus and species. We have modified the format presented by Vickers and Plowman (1984) to include more extensive ethnographic information. We hope that this format will serve as a model for consistent ethnobotanical reporting, and that it presents a maximum amount of information of interest to botanists and anthropologists in an abbreviated (and space-saving) manner.

For each species the following information is given: family, genus and species, geographic distribution, community, altitude and habitat of collection, local name(s), voucher specimen numbers, and ethnographic information, in the following format:

### FAMILY

#### Genus species author(s)

Known geographic distribution of the species.

Community, altitude. (Specific locality and habitat (specimen number if variable).

*local name* (language, 'gloss') [*specimen number*]

*local name* (language, 'gloss') [*specimen number*]

Ethnographic information (informant's initials). Further ethnographic information (informant's initials).

Community (if different), altitude, etc.

The format for the major cultivated plants includes more extensive discussion by the authors.

**FAMILY, GENUS, SPECIES**—Plants which could not be identified to species are listed at the end of their genus; those which could not be identified to genus are listed at the end of their family.

**KNOWN GEOGRAPHIC DISTRIBUTION OF THE SPECIES**—The geographic distribution was gleaned from published works (e.g., *Flora of Peru*, monographs), through consultation with taxonomic specialists and by checking specimens in Field Museum herbarium.

**COMMUNITY**—The structure of Chinchero communities (Sp., *comunidad*) or *ayllus* is described under "Setting" and their locations given in Figure 1. Since communities have ethnic identity and community-specific activities, economies, and even plant names, the community of collection is noted. The majority of collections was made in Cuper, the most environmentally diverse community.

**ALTITUDE**—Altitudinal ranges refer specifically

to localities of collection, not to communities or habitat types.

**HABITAT**—Habitats are quoted from botanists' collection notes. Specimen numbers follow descriptions only if habitats differ. Habitat descriptions generally express both the nature of human activity in a zone (i.e., "pastured," "garden") and its physical nature (i.e., "cliff faces," "waterfall"). Specific toponyms included in habitat descriptions will allow future researchers who talk to local people to locate these habitats directly within the 135-sq km area of Chinchero. Chinchero residents have a minutely named community topography and an experience-based phytogeography linking plants to specific places in their environment.

**LOCAL NAME**—We did not edit information on local names of plants to determine the "correct" or "best" name for a plant, but instead listed all responses. Frequently, more than one local name is listed for a species; sometimes more than one name is given for a single specimen number. If the informant was uncertain, we noted that the name was "suggested" as a possibility, or offered as an "alternate" to a preferred name. Even a single individual may accept more than one legitimate name for a plant (as in the case of *Astragalus garban-cillo*). Spelling variation reflects varying pronunciation as we heard and recorded it. All Quechua words are spelled in a consistent orthography (see Note on Quechua Orthography).

**LANGUAGE**—Local names are identified as either Quechua (Qu.) or Spanish (Sp.). Quechua names derived from Spanish words are identified as Qu. from Sp., giving the Spanish word of origin.

**GLOSS OF NAME**—Translations for Quechua plant names are provided only if informants specifically told us that such a translation might be applied to that name; dictionary or hearsay translations are not included. Reference for spelling and meaning of all Spanish words is the *Diccionario de la Lengua Española* (Real Academia Española, 1984).

**SPECIMEN NUMBER**—The majority of specimens was collected between January and April, 1982 [D1339–D1822, K100–K321]. "D" numbers were collected by W.D., C.F., E.F., S.R.K., and C.R.S.; arbitrarily, names were listed alphabetically. After W.D. left the project, S.R.K. was listed first, represented by "K" numbers. Additional specimens were collected by E.F. in 1983 [F201–F202] and by C.F. and E.F. in 1985–1986 [F254–F258, F260–F282, F285–F366, F368–F371, and F376].

**ETHNOGRAPHIC INFORMATION**—We did not make judgments of cultural value in reporting eth-

nographic statements about plants. All information is reported, since childhood memories and aesthetic exclamations are equally as important as economic uses in Quechua people's understanding of the natural world. In order to express the variable nature of Quechua plant knowledge, we observed a number of conventions.

All observations have been translated into English, but words allowing only approximate translation such as illness terms are followed by original Spanish or Quechua words. Because Quechua categories of illness and cure do not correspond to pharmacological vocabulary (i.e., febrifuge, amenorrheic), we avoided the use of pharmacological terms.

Ethnographic information is reported in the voice of informants (whose initials are included at the end of the sentence) rather than as statements by the researchers about what informants said. For example, "Edible, and as good to eat as meat" (L.P.) is in place of "Said to be edible and as good to eat as meat." Although the voice is maintained, the translations are anything but direct; for instance, the exchange with L.P. probably went something like, "This stuff's good, you can eat it, I eat it; in fact if I don't have meat I eat it, it's like meat." "Meat?" "Meat." "Meat?" "Tastes just like meat." (Anonymous statements, unattributed to individuals, are by the authors. We speak as one, although in a future study, we would choose to present the diverse members of the research team as individuals as well.)

In the same way, we do not judge whether plants "treated" or successfully "cured" illnesses, but rather report what we were told. The ideas of "treatment" and "cure" are not separate to Quechua people; for example, the single word *hampiy* might be said to mean 'treat for the purpose of curing.'

The following conventions rule the expression of negative knowledge:

**Name [Use] Unknown**—Informants said that they did not know the name or use of a plant; such a name or use may exist, but they did not know it or could not recall it.

**Plant Has No Use**—Informants stated definitely that a plant had no use. A name was thought to exist for every plant, although one lichen had no name because it was considered to be soil, not a plant.

**Name [Use] Not Recorded**—Ethnographic information was not recorded. A number of these plants grew in places which people fear and refuse to visit or talk about; for instance, Puququ water-

fall, locally known to be inhabited by a *sirena* (Sp., 'malignant female spirit').

### Informant Biographies

Biographies are given of individuals interviewed in specific reference to plant specimens. Language skills vary greatly, but informants are judged as bilingual (bl.; Quechua and Spanish) or monolingual (ml.; Quechua only) on the basis of ability and frequency of communication in those languages. Approximate ages (as of 1982) are rounded off to the nearest decade up to 60; ages over 60 are impossible to estimate. Many changes took place in the lives of these individuals since the study began in 1982: Several married, several died, at least one migrated to Lima, and one became a trilingual university graduate.

1. G.A., Guadalupe Alvarez, married female, Yanacona, age 50, bl.
2. A.Ca., Adela Callañaupa Alvarez, unmarried female, Yanacona, age 10, bl., student
3. A.Co., (the late) Angelica Concha, unmarried female, Ayllupunqu, age 10, bl., student
4. N.C., Ñilda Callañaupa Alvarez, unmarried female, Yanacona, age 20, bl., university student
5. V.C., Vicente Callañaupa, married male, Yanacona, age 50, bl.
6. E.C., Eugenia Cusihuaman, married female, Cuper, age 60, ml.
7. Je.C., Jeronimo Cusihuaman Quispe, unmarried/married male, Cuper, age 20, bl., university student
8. Jo.C., Jose Cusihuaman, married male, Pukamarka, age 30, bl.
9. M.C., Melchior Cusihuaman, married male, Cuper, age 60, ml.
10. B.G., (the late) Benita Gutierrez Garcia, married female, Cuper, age 60, ml., weaver
11. A.H., (the late) Anisetto Huaman, married male, Cuper, age 60, ml.
12. J.H., Jacinto Huaman, married male, Ayllupunqu, age 40, bl.
13. L.H., Lorenzo Huaman, married male, Taucca, age 30, bl.
14. M.H., Maria Huaman, married female, Taucca, age 30, ml.
15. O.H., Octavio Huaman, unmarried male, Taucca, age 10, bl.
16. T.H., Tomás Huaman Quispe, married male, Ayllupunqu, age 50, bl. archaeological employee
17. S.J., Simeona Jaimes Livita, married female, Ayllupunqu, age 20, bl.
18. M.L., Maria Livita, widowed female, Ayllupunqu, age 50, ml.
19. T.L., Teodora Livita, unmarried female, Ayllupunqu, age 50, ml.
20. G.P., Graciano Pumaaylli, unmarried/married male, Cuper, age 20, bl.
21. L.P., Lorenzo Pumaaylli, married male, Cuper, age 50, bl.
22. P.P., Pedro Pablo Pumayalli, married male, Cuper, age 50, bl., community leader
23. Au.Q., Aurelio Quillahuaman Livita, unmarried male, Ayllupunqu, age 20, bl.
24. Al.Q., Alejandro Quispe, married male, Yanacona, age 40, bl., blacksmith
25. Am.Q., unmarried male, Cuper, age 20, bl.
26. C.Q., Cipriana Quispe, married female, Cuper, age 60, ml., weaver
27. B.Q., (the late) Benita Quispe, widowed female, Yanacona, age 60, ml.
28. C.R., Cleofé Rodríguez, married female, Ayllupunqu, age 30, bl.
29. G.S., Genovevo Sallo Gutierrez, married male, Cuper, age 20, bl.
30. J.S., (the late) Julian Sallo, married male, Cuper, age 60, ml.
31. M.T., Martina ?, married female, Taucca, age 20, ml.
32. U.I., (unidentified informant) refers to the group of casual informants spoken with incidentally throughout the study.

At least 19 of these individuals are now related to at least one of the authors through *compadrazgo*: six of these relationships already existed at the beginning of this study in 1982. To our knowledge, five have died.

Although efforts made to work with a balanced group of informants were purely informal, they do represent a range of social roles and backgrounds. Fourteen are female; 17 are male. Estimated ages range from nine to more than 60, including all groups between. Twenty are bilingual Spanish/Quechua speakers; 11 are monolingual Quechua speakers, meaning that they communicate exclusively in Quechua, although of course everyone understands at least some words of Spanish. The largest number of informants is from Cuper (12), followed by Ayllupunqu (8), Yanacona (6), Taucca (4), and Pukamarka (1).

## Note on Quechua (Qichuwa) Orthography

Quechua (*runa simi*) words in this work are spelled according to the official alphabet decreed by the government of Peru on 18 November 1985 as published in *El Peruano*, Lima, Tuesday, 24 December 1985.

- a (as in English hall)
- ch - chh - ch' (as in English chum, with variations)
- h (as in English hall)
- i (as ee in English tree; see note below)
- k - kh - k' (as k in English kiss, with variations)
- l (as in English land)
- ll (as li in English Dahlia)
- m (as in English, mum)
- n (as in English, nun)
- ñ (as in Spanish, caña)
- p - ph - p' (as in English, pot, plus variations)
- q - qh - q' (sound not present in English)
- r (variable)
- s (as in English, soup)
- t - th - t' (as in English top, plus variations)
- u (as in Spanish tú; see note below)
- w (as in English, wash; aw, as ow in English, cow)
- y (as in English, you; ay, as in Spanish hay)

A few notes may be helpful for anyone who wishes to pronounce Quechua words. First, there are only three vowels: **a**, **i**, and **u**. The **a** is not variable, but to native English speakers, the **i** (pronounced like ee in tee-shirt) varies to **e** (as in penny); the **u** (as in tuna) varies to **o** (as in hole). This sound shift happens if the vowels are in the vicinity of a **q** (for example, **muqu** ('knot') sounds like **moqo**; and **chiqchi** ('three-color mottled') sounds like **cheqchi**.) A few cases, such as **lumu lumu** (sounds like Spanish, **lomo**) are harder to account for and are noted as exceptions. **Coca** and **oca** are widely written words, and to avoid confusion have not been rendered **kuka** and **uka**. Published place names such as Chinchero and Cusco have been left in the form in which they usually appear on maps, as has the community name Cuper.

The consonants **ch**, **k**, **p**, **q**, and **t** have three forms: unaspirated (**p** can sound like **b**; **q** can sound like **g**; **t** can sound like **d**); aspirated (**chh**); and followed by a glottal stop (**ch'**). In Chinchero glottal stops are not used consistently, even by a single individual, so we do not worry excessively about them.

There are no diphthongs; two vowel sounds do not occur next to each other. All words are accented on the penultimate syllable.

Chinchero is rapidly becoming bilingual. Variation in the name for peas (*Pisum sativum*) ranges from **alwirha** (by older monolingual Quechua speakers) to the commonly heard **alberga** to standard Spanish *arveja*. Hispanicized spelling is retained for words borrowed from or based on Spanish; for example, **culandro** from *cilantro*. These words should be pronounced as if they were Spanish.

## List of Chinchero Plants

### FUNGI

#### MORCHELLACEAE

##### *Morchella deliciosa* Fries

Pantemperate and in mountainous regions of the tropics up to tree line.

Cuper, 3450–3500 m. Lightly grazed slopes above Puqpuq waterfall.

Name and use not recorded [D1508]

##### *Morchella elata* Fries

Pantemperate and in mountainous regions of the tropics up to tree line.

Cuper, 3600–3900 m. Among tall grass on Antakillqa hillside.

*khallampa, pacha khallampa* (Qu., *pacha*, 'earth') [D1680A]

Edible and as good to eat as meat (L.P.).

Sometimes cooked in main courses in place of animal stomach (L.P.).

##### *Morchella esculenta* (L.) Fries

Pantemperate and in mountainous regions of the tropics up to tree line.

Cuper, 3600–3900 m. Fungus among tall grass on Antakillqa hillside.

*khallampa, pacha khallampa* (Qu., *pacha*, 'earth') [D1680B]

Edible and as good to eat as meat (L.P.).

Sometimes cooked in main courses in place of animal stomach (L.P.).

#### TRICHOLOMATACEAE

##### *Lepista glabella* (Speg.) Singer

Widely distributed in tropics and subtropics.

Cuper, 3600–3900 m. Antakillqa hillside.



Name and use unknown (L.P.) [D1679]  
Not edible (L.P.).

**Pleurocollybia cibaria** Singer

Tropical South America.

Cuper, 3500–3700 m. On steep rocky slopes among *ichu* and *awarunkhu* on Gutierrezchayuq section of Antakillqa hill.

*quncha* (Qu.) [F345]

Edible. Can be eaten in hot sauce or main dishes.

**Pleurocollybia** sp. aff. *cibaria* Singer

Tropical South America.

Cuper, 3600–3900 m. Antakillqa hillside.

*llanka quncha* (Qu.) [D1678]

An ingredient in hot sauce, as is another fungus, *Inka quncha* (not collected) (L.P.).

**LICHENS**

**DIPLOSCHISTACEAE**

**Diploschistes** aff. *hypoleucus* Zahlbr.

South America, on sandy soils at higher elevations.

Tauca, 4000–4280 m. Lichen on packed soil on open hillside.

*allpalla* (Qu., 'just soil and nothing more') [K219]

Not a plant, only white soil (G.A., O.H.).

**GYROPHORACEAE**

**Umbilicaria** *peruviana* Llano

Peruvian Andes.

Tauca, 3900 m. Lichen on rocks of stone wall in community center.

*qaqa sunkha* (Qu., *qaqa*, 'rock'; *sunkha*, 'beard') [K230]

Use unknown (G.S.).

**PARMELIACEAE**

**Cetrariastrum** aff. *nigrociliatum* (Bouly de Lesdain) W. Culb. & C. Culb.

Tropical Mexico to northern South America.

Tauca, 4000–4280 m. Lichen on hard-packed soil.

*qaqa sunkha* (Qu., *qaqa*, 'rock'; *sunkha*, 'beard') [K223A]

Use unknown (O.H.).

**Hypotrachyna** sp.

Tauca, 4000–4280 m. Lichen on hard-packed soil.

*ayaq waqtan* (Qu., *ayaq*, 'corpse's'; *waqtan*, 'ribs') [K221B]

Used as a remedy for coughs (O.H.).

**Xanthoparmelia** *peruviansis* Hale

Peru.

Tauca, 4000–4280 m. Lichen on hard-packed soil.

*ayaq waqtan* (Qu., *ayaq*, 'corpse's'; *waqtan*, 'ribs') [K221A]

Used as a remedy for coughs (O.H.).

**PELTIGERACEAE**

**Peltigera** *horizontalis* (Hudson) Baumg.

Pantemperate.

Cuper, 3330 m. Lichen over mosses on steep wet rock slopes below Puqpuq waterfall.

Name and use not recorded [D1822]

**Peltigera** *polydactyla* (Necker) H.

Pantemperate.

Cuper, 3500–3700 m. Lichen growing with *Peltigera praetextata* (K283B) among mosses on moist steep rock on Gutierrezchayuq section of Antakillqa hillside.

*maki maki* (Qu., *maki*, 'fist') [K283A]

Use unknown (G.P.).

**Peltigera** *praetextata* (Floerke) Vainio

Pantemperate in cooler climates.

Cuper, 3500–3700 m. Lichen growing with *Peltigera polydactyla* (K283A) among mosses on moist steep rock on Gutierrezchayuq section of Antakillqa hillside.

*maki maki* (Qu., *maki*, 'fist') [K283B]

Use unknown (G.P.).

**STICTACEAE**

**Sticta** aff. *boliviana* W. Nyl.

Northern South America.

Cuper, 3500–3700 m. Lichen among mosses on moist steep rock on Gutierrezchayuq section of Antakillqa hillside.

*maki maki* (Qu., *maki*, 'fist') [K284]

Use unknown (G.P.).

**TELOSCHISTACEAE**

**Teloschistes** *exilis* (Michaux) Vainio

Widely distributed in the tropics and subtropics.

Cuper, 3400–3810 m. Lichen on steep, rocky,

grazed slopes along trail on K'inti Cuesta hillside, and on twigs of *Barnadesia* sp. near Inca terraces.

*ch'apu ch'apu* (Qu.) (G.S.) [D1780]

Name unknown [D1376]

Use unknown (G.P., G.S.).

## THELEPORACEAE

*Cora pavonia* (Sw.) Fries

Widespread in the tropics.

Tauca, 4000–4280 m. Lichen among green moss.

*winku siki* (Qu., *winku*, 'large glass with straight flaring sides'; *siki*, 'posterior') [K222]

*maki maki* (Qu., *maki*, 'fist') suggested name (M.T.) [K222]

Name was suggested, perhaps on the spur of the moment, in reference to the lichen's growth form (O.H.). Use unknown (O.H., M.T.).

## USNEACEAE

*Everniopsis trulla* (Achar.) W. Nyl.

Widely distributed in Central and South America.

Cuper, 3500–3700 m. Lichen on rocks on Gutierrezchayuc section of Antakillqa hillside.

Name and use unknown (G.P.) [K292]

*Usnea* sp.

Cuper, 3450–3550 m. On rock in quebrada above Puqpuq waterfall.

*ch'apu ch'apu* (Qu.) (G.S.) [D1479]

*kaka suphu* (Qu.) (G.P.) [D1479]

Possibly drunk in teas (G.S.). Use unknown (G.P.).

Family indet.

Cuper, altitude unknown. Antakillqa hillside.

*papel papelcha* (Qu. from Sp. *papel*, 'paper'; *-cha*, 'little') [F279]

Used to make a tea to treat cough (U.I.).

Family indet.

Cuper, altitude unknown.

Name and use unknown [F346]

Lichens ("plants of this kind") are said to prefer to live around people (U.I.).

## ALGAE

### CHROOCOCCACEAE

*Anacystis aeruginosa* (Zanardini) Drouet & Daily  
Cosmopolitan.

Yanacona, 3750 m. Submerged in water in fallow fields on moist, seasonally inundated pampa.

*hamp'atu llullucha* (Qu., *hamp'atu*, 'frog'; *llullucha*, 'little vegetable greens') [D1631]

Plant has no use (G.P.).

### NOSTOCACEAE

*Nostoc commune* Vaucher  
Cosmopolitan.

Pukamarca, 3800 m. Alga floating in shallow water of Lake Pataqucha.

*llullucha* (Qu., *llullu*, 'vegetable greens'; *-cha*, 'little') [D1592]

Eaten fresh as a tonic (Sp., *refresco*) (G.S.).

Cooked into main dishes such as *picante* (Sp., 'spicy dish'), or with *tarwi* (*Lupinus mutabilis*) and *llinlli* (freeze-dried *Ullucus tuberosus*) in stew (G.S.). Sold fresh in Chinchero Sunday market and in Cusco market.

Yanacona, 3750 m. Alga in moist depressions and in flooded areas in cultivated fields.

*llullucha* (Qu., *llullu*, 'vegetable greens'; *-cha*, 'little') [D1632]

This variety is not eaten and is distinguished from the edible variety, which is larger and grows in larger bodies of water (G.P.).

Ayllu Punqu, 3800 m. Alga on moist soil at edge of potato field near shallow Lake Punqulay.

Name and use not recorded [D1636]

### MOSESSES (MUSCI)

#### AMBLYSTEGIACEAE

*Sciaromium crassinervatum* Mitt.

Peru to Chile.

Cuper, 3330 m. Moss on wet rocks on steep cliff by Puqpuq waterfall.

Name and use not recorded [D1796]

## BARTRAMIACEAE

### *Breutelia austro-arcuata* (C. Müll.) Par.

Peru, Bolivia, Colombia, Argentina, Guatemala, Mexico.

Cuper, 3300 m. Hatun Wayq'u quebrada, place called Kiqtuoyoq.

Name and use unknown [F282A]

### *Breutelia nigrescens* Herzog

Peru and Bolivia.

Tauca, 4050–4250 m. On steep rocky slopes. *kaka sunqi* (Qu., *kaka*, 'rock'; *sunqi*, 'beard')

(L.H.) [D1523]

Name unknown (G.S.) [D1523]

Used for Christmas decorations (G.S.).

Use unknown (L.H.).

## MNIACEAE

### *Plagiomnium rhynchophorum* (Hook.) T. Kop.

Mexico to Brazil and the West Indies.

Cuper, 3360 m. Moss on wet rocks on steep cliff.

Name and use not recorded [D1794]

## ORTHOTRICHACEAE

### *Zygodon pichinchensis* (Taylor) Mitt.

Mexico and Costa Rica; Venezuela and Colombia to Peru.

Tauca, 4050–4250 m. Moss on moist rock face, on steep rocky slopes.

*kaka sunqi* (Qu., *kaka*, 'rock'; *sunqi*, 'beard')

[D1522]

Name unknown (G.S.) [D1522]

Use unknown (L.H., G.S.).

### Family indet.

Yanacona, 3800 m. Moss on rocks on dry pastured slopes.

*yunqu* (Qu.) [K129]

Use unknown (T.H.).

### Family indet.

Cuper, approx. 3500 m. Moss on moist rocks on Antakillqa hillside, place called Tasakurandaladunpi.

*urqun chapun* (Qu., *urqun*, 'male'; *chapun*, 'hairy') [F295]

Plant grows erect; use unknown (T.L.).

### Family indet.

Cuper, approx. 3500 m. Moss on moist rocks on Antakillqa hillside, place called Tasakurandaladunpi.

*china chapun* (Qu., *china*, 'female'; *chapun*, 'hairy') [F296]

Use unknown (T.L.).

## LIVERWORTS (HEPATICAE)

## AYTONIACEAE

### *Plagiochasma rupestre* (F. Förster) Stephani

Widely distributed in Europe, Africa, Asia, Oceania and North and South America.

Cuper, 4500 m. Summit of Antakillqa hillside. Growing with *Lunularia cruciata* (D1726A).

*maki maki* (Qu., *maki*, 'fist') [D1726B]

Used to treat kidney or waist-area ailments (L.P.). As a remedy for fainting by married women, the whole plant is boiled for use as a tea or boiled as an ingredient in *chicha* (Qu., 'maize beer') (G.A.).

### *Plagiochasma* sp.

Cuper, 3100 m. On moist bank beneath a large stone in shade.

*maki maki* (Qu., *maki*, 'fist') [K263]

Use unknown (G.P.).

## CLEVEACEAE

### *Athalamia andina* (Spruce) Hatt.

Peru and Argentina.

Cuper, 3800 m. On clay soil on earthen walls in house courtyard.

*maki maki* (Qu., *maki*, 'fist') [K209]

Use unknown (G.P.).

## LUNULARIACEAE

### *Lunularia cruciata* L.

Europe, North Africa, North America and in South America from Peru to Chile and Argentina.

Cuper, 4500 m. Summit of Antakillqa hill. Growing with *Plagiochasma rupestre* (D1726B).

*maki maki* (Qu., *maki*, 'fist') [D1726A]

Used to treat kidney or waist-area ailments (L.P.). As a remedy for fainting by married women, the whole plant is boiled for use as a tea or boiled as an ingredient in *chicha* (Qu., 'maize beer') (G.A.).

## MARCHANTIACEAE

### *Dumortiera hirsuta* (Sw.) Nees

Widely distributed in Europe, Africa, Asia and North and South America.

Cuper, 3360 m. Over mosses and wet rocks among trees on steep cliffs by Puqpuq waterfall.

Name and use not recorded [D1795]

### *Marchantia* sp.

Umasbamba, 3800 m. On wall of irrigation ditch on pampa north of Lake Piuray.

*maki maki* (Qu., *maki*, 'fist') [K148, K209]

Use unknown (E.C.). No use reported (G.P.).

## TARGIONIACEAE

### *Targionia hypophylla* L.

Widely distributed in temperate regions; in South America from Peru to Argentina.

Cuper, 3810 m. Growing with mosses in moist cracks of large eroded rock called Maranqaqa.

Name and use unknown (G.P.) [D1387]

## FERNS AND FERN ALLIES

Ferns are broadly grouped by Chinchero people into four groups: those with pinnately compound leaves are generically called *raki raki* (Qu., *raki*, 'divided'); and those with entire leaves (such as *Polypodium angustifolium*) are called *qalaywala*, a word of probable Andean origin which is now used to refer to such ferns in Spain and Guatemala as well. Less commonly, reference is made to the resemblance of leaves to the spine and ribs by the name *ayaq waqtan* (Qu., 'ribs of the corpse') or *yana waqtan* (Qu., 'black ribs'). Several species of *Polypodium* are called *inca coca*, a possible reference to former use when chewed as a local coca substitute.

## ASPLENIACEAE

### *Asplenium* sp. aff. *A. divaricatum* Kunze (or possibly sp. nov.)

Yanacona, 3800 m. Along stream below Inca ruins.

*yana waqta* (Qu., *yana*, 'black'; *waqta*, 'ribs') [K141]

Name refers to the black rachis; plant has no use (G.S.).

### *Asplenium monanthes* L.

Southwestern U.S. to Argentina; Hawaii, Africa.

Cuper, 3300–3550 m. Fern hanging from moist rock above waterfall.

*raki raki* (Qu., *raki*, 'divided') [D1482]

Name and use not recorded [D1805]

Plant has no use (G.P.).

### *Asplenium triphyllum* C. Presl

Colombia to Argentina.

Cuper, 3360 m. Pendulous fern on steep, wet, rocky cliffs by waterfall.

Name and use not recorded [D1791]

## DENNSTAEDIACEAE

### *Dennstaedtia bipinnata* (Cav.) Maxon

Mexico to Panama, Trinidad to Colombia, south to Bolivia; West Indies.

Cuper, 3330 m. Fern in moist soil of old rocky field along stream.

Name and use not recorded [D1821]

## DRYOPTERIDACEAE

### *Cystopteris fragilis* (L.) Bernh.

Widely distributed, North and South America, Old World.

Cuper, 3330–3840 m. Fern hanging from steep wet rock cliffs and moist bank at Puqpuq waterfall; forming clumps on large rock; protected on rock wall of house courtyard.

*raki raki* (Qu., *raki*, 'divided') (G.P.) [K203, D1467]

*pampa raki raki* (Qu., *pampa*, 'flat place'; *raki*, 'divided') (G.P.) [K147]

Name not recorded [D1790, D1801]

Use unknown (G.P.).

### *Cystopteris fragilis* (L.) Bernh. s.l.

Widely distributed, North and South America, Old World.

Ayllu Punqu, 3800 m. Fern on steep bank in ravine around potato fields along stream.

Name and use unknown (G.S.) [K137]

*yana waqta* (Qu., *yana*, 'black'; *waqta*, 'ribs') probable name (G.S., S.J.).

### *Elaphoglossum* sp. aff. *E. petiolatum* (Sw.) Urban (or possibly sp. nov.)

Community unknown, 3900 m. Fern on cliff faces along trail from community of Ch'ussu to Cusco, approximately two hours walk from Chinchero center.

*qalaywala* (Qu., adopted into Sp.) [K215]  
Use unknown (T.H.).

**Elaphoglossum** sp.

Cuper, 3500–3800 m. Fern on hillside.  
*qalaywala* (Qu., adopted into Sp.) [K289]  
Use unknown (G.P., C.R.).

**Elaphoglossum** sp.

Cuper, approx. 3500 m. Fern on moist rocks on Antakillqa hillside, place called Tasakuranaladunpi.  
*china qalaywala* (Qu., *china*, 'female') [F292]  
Sori said to be "worms" (Qu., *quru*).  
Leaves notably thinner than other species. Use unknown (T.L.).

**Elaphoglossum** sp.

Cuper, approx. 3500 m. Fern on moist rocks on Antakillqa hillside, place called Tasakuranaladunpi.  
*pampa qalaywala* (Qu.) [F293]  
Said never to bear sori, and so to be "natural" (Sp., *natural*) at all times (T.L.).  
Use unknown (T.L.). T.L. viewed sori as parasites, and so felt that bearing sori was an unnatural condition of the leaf.

**Elaphoglossum** sp.

Cuper, approx. 3500 m. Fern on moist rocks on Antakillqa hillside, place called Tasakuranaladunpi.  
*urqun qalaywala* (Qu., *urqun*, 'male') [F294]  
Said never to have sori, and so to be "natural" (Sp., *natural*) at all times. Use unknown (T.L.). T.L. viewed sori as parasites, and so felt that bearing sori was an unnatural condition of the leaf.

**Polystichum cochleatum** (Klotzsch) Hieron.

Colombia to Bolivia.  
Tauca, 4050–4250 m. Fern on steep rocky slopes.  
*raki raki* (Qu., *raki*, 'divided') [D1572]  
Used for decoration at Christmas time (M.H., G.S.).

**Polystichum montevidense** (Spreng.) Rosenst. var. *nudicaule* (Rosenst.) Tryon

Venezuela, Colombia to Bolivia.  
Tauca, 4050–4250 m. Among rocks on steep slopes.  
*raki raki* (Qu., *raki*, 'divided') [D1540]

This plant is a "male" (Sp., *macho*) variety, of which *Polystichum orbiculatum* (D1541) is the "female" form (G.S.).

**Polystichum orbiculatum** (Desv.) Remy & Fée var. *orbiculatum*

Ecuador, Peru, Bolivia.  
Tauca, 4050–4250 m. Among rocks on steep slopes.

*raki raki* (Qu., *raki*, 'divided') [D1541]  
This plant is said to be a "female" (Sp., *hembra*) variety, of which *Polystichum montevidense* (D1540) is the "male" form (G.S.). A tea made from the root is drunk for the health of the kidneys (G.P.).

**Woodsia montevidensis** (Sprengel) Hieron.

Haiti, Colombia to Argentina, Uruguay, southern Brazil, also in South Africa.  
Cuper, 3330–3500 m. Fern on steep wet rocks, in moist soil along brook in quebrada below Puqpuq waterfall, and at place called Tasakuranaladunpi.  
*urqun raki raki* (Qu., *urqun*, 'male'; *raki*, 'divided') (T.L.) [F291A]  
Name and use not recorded [D1807, D1815]  
*raki raki* (Qu., *raki*, 'divided') probable name (G.S., S.J.)  
Use unknown (T.L.).

**POLYPODIACEAE**

**Campyloneuron amphostenon** (Kunze ex Klotzsch) Fée

Southern Mexico, Guatemala, El Salvador, Costa Rica, Venezuela, Colombia to Bolivia.  
Cuper, 3450 m. In quebrada above Puqpuq waterfall.  
*qalaywala* (Qu., adopted into Sp.) [D1477]  
Used as a tonic (Sp., *refresco*) (G.S.).  
Boiled to wash the head for headache (G.S.).

**Campyloneuron irregulare** Lellinger

Costa Rica, Panama, Colombia, Ecuador, Peru, Bolivia.  
Cuper, 3800 m. Fern transplanted to house garden.  
*qalaywala* (Qu., adopted into Sp.) [K112]  
The fact that A.H. transplanted this fern to his house garden suggests that he

considered it useful, although no use was reported by him, G.S., or T.H.

**Polypodium angustifolium** Sw. var. *angustifolium*  
Florida, West Indies, Mexico to South America.

Cuper, 3450–3810 m. Terrestrial fern from cracks in rocks on steep hillsides (*D1454*, *D1649*) and transplanted to home garden.

Yanacona, 3800 m. Dry pastured slopes and rocks (*K128*).

*qalaywala* (Qu., adopted into Sp.) (N.C., B.G., T.H., G.P., G.S.) [*D1384*, *D1454*, *D1649*, *K128*]

*inca coca* (Qu.) [*D1384*]

Used for tea (G.P.) for *desmantu* (N.C., B.G.). The leaves of *Inca coca* (*D1384*) are chewed, and a tea made from the leaves is used as a purgative (G.P.).

**Polypodium buchtienii** Christ & Rosenst.

Colombia to Argentina, Uruguay, Brazil.  
Cuper, 3450–3600 m. Fern on steep slope.

*inca coca* (Qu.) (G.S.) [*D1432*, *D1486*]

*raki raki* (Qu., *raki*, 'divided') (G.P.) [*D1486*]

Used as tea (G.S.). Use unknown (G.P.). Some informants said that the leaves of this plant are chewed as a substitute for coca, but others regarded that as a fable. G.S. and S.J. had both chewed the plant and said that chewing it makes your mouth go to sleep (as does coca).

**Polypodium crassifolium** L.

Mexico to Bolivia and Brazil, West Indies.  
Cuper, 3300–3500 m. In cracks of rock cliffs on steep slope.

*qhishwa qalaywala* (Qu., *qhishwa* 'warm place') (S.J.) [*D1751*]

*qalaywala* (Qu.) (G.P.) [*D1771*]

Sometimes made into a tea for coughs (S.J.). Use unknown (G.P.).

**Polypodium lasiopus** Kl. vel aff.

Colombia, Venezuela, Peru.  
Cuper, altitude unknown. Antakillqa hillside.  
Name and use unknown [*F274A*]

**Polypodium** sp. aff. *P. polypodioides* (L.) Watt  
Mexico to northern South America.

Ayllu Punqu, 3800 m. Fern in ravine on steep bank, around potato fields above stream.

*inca coca* (Qu.) [*K136*]

Use unknown (G.S.).

**Polypodium pycnocarpon** C. Chr.

Peru, Bolivia, and Argentina.  
Cuper, altitude unknown. Antakillqa hillside.  
Name and use unknown [*F274B*]

**Polypodium** sp. (subg. *Polypodium*)

Cuper, 3500–3600 m. Fern on moist, shady undersides of rocks on steep hillside.

*inca coca* (Qu.) [*D1658*]

Leaves may be chewed like coca, but without *llipta* (Qu., 'alkaline admixture for chewing with coca'); tastes sweet (G.A., N.C., B.G.).

## PTERIDACEAE

**Adiantum digitatum** Presl

Ecuador to Argentina and Brazil.

Cuper, 3330 m. Fern on wet rocks by brook in quebrada.

Name and use not recorded [*D1802*]

*yanali*, *yana tullu* (Qu., *yana*, 'black'; *tullu*, 'stem') probable name (G.S.)

Use unknown (G.S.).

**Adiantum raddianum** Presl

Throughout tropical America.

Cuper, 3360 m. Fern on steep wet cliffs by Puququ waterfall.

Name and use not recorded [*D1789*]

*yana waqta* (Qu., *yana*, 'black'; *waqta*, 'ribs') probable name.

Use unknown (S.J., G.S.).

**Cheilanthes incarum** Maxon

Peru and northwest Argentina.

Cuper, 3800 m. Terrestrial fern.  
*aya huqta* (Qu., *aya*, 'corpse') (G.P.) [*D1455*]

*raki raki* (Qu., *raki*, 'divided') (G.S.) [*D1455*]

Use unknown (G.P., G.S.).

**Cheilanthes marginata** H.B.K.

Venezuela and Colombia, south to Argentina.

Cuper, 3500–3600 m. Fern forming clumps from rock cracks on steep slopes, and on moist rocks on Antakillqa hillside at place called Tasakuranaladunpi.

*raki raki* (Qu., *raki*, 'divided') (G.P.) [*D1645*]

*urqun raki raki* (Qu., *urqun*, 'male'; *raki*, 'divided') (T.L.) [*F291B*]

*culantro pusu* (Qu., from Sp. *culantrillo de pozo*, 'coriander of the well') (N.C., B.G.) [D1645]

Use unknown (N.C., B.G., T.L., G.P.).  
Used to make nativity scenes at Christmas (G.S., S.J.).

### **Cheilanthes pruinata** Kaulf.

Peru to Argentina.

Cuper, 3450–3600 m. Fern forming clumps from cracks in rocks on steep slopes above Puqpuq waterfall and of Antakillqa hillside; on moist rocks on Antakillqa hillside, at place called Tasakuranaladunpi.

*ayaq waqtan* (Qu., *ayaq*, 'corpse's', *waqtan*, 'ribs') (G.P.) [D1654]

*culantro pusu* (Qu., from Sp. *culantrillo de pozo*, 'coriander of the well') (N.C., B.G.) [D1654]

*inca coca* (Qu.) (G.A.) [D1654]

*raki raki* (Qu., *raki*, 'divided') (G.P.) [D1661]

*china raki raki* (Qu., *raki*, 'divided'; *china*, 'female') (T.L.) [F290]

*puna raki rakicha* (Qu., *raki*, 'divided'; *puna*, 'high open area'; *-cha*, 'little') (N.C., B.G.) [D1661]

Name and use unknown (G.S.) [D1514]

For a drink (D1654) and not useful to drink (D1661) (N.C., B.G.). To chew like coca, but without *llipta* (Qu., 'alkaline admixture for chewing with coca') (G.A.). Use unknown (T.L., G.P.).

### **Notholaena nivea** (Poirlet) Desv. var. **flava** Hook.

Colombia to Argentina and Brazil.

Cuper, 3330–3550 m. Fern on steep wet rock face.

Name and use unknown (G.S.) [D1464]

Name and use not recorded [D1809]

### **Pellaea ovata** (Desv.) Weath.

Southern Texas to Costa Rica; Colombia and Venezuela south to Argentina; West Indies.

Cuper, 3350–3500 m. Hillside.

Name and use not recorded [D1768]

*raki raki* (Qu., *raki*, 'divided') probable name (G.S., S.J.)

### **Pellaea ternifolia** (Cav.) Link var. **ternifolia**

Southwestern United States to Nicaragua; Colombia and Venezuela to Argentina; West Indies; Hawaiian Islands.

Cuper, 3500–3600 m. Fern forming dense clumps in thin soil among rocks on steep hillside.

*inca coca de la puna* (Qu., Sp.) (G.P.) [D1650]

*culantro pusu* (Qu., from Sp. *culantrillo de pozo*, 'coriander of the well') (N.C., B.G.) [D1650]

Name and use unknown (G.A.) [D1650]

Used for tea (G.P.). Use unknown (N.C., B.G.).

### **Pteris muricata** Hook.

Mexico to Colombia and Peru.

Cuper, 3360 m. Large fern on steep wet rock cliffs at Puqpuq waterfall.

Name and use not recorded [D1786, D1787]

*raki raki* (Qu., *raki*, 'divided') probable name of both specimens (S.J., G.S.)

## SALVINIACEAE

### **Azolla** aff. **filiculoides** Lam.

Western United States, Mexico, Guatemala, Colombia to Chile.

K'aparay (Ayllu Punqu), 3800 m. Forming dense mats floating on shallow pools by Lake Piuray.

Name and use unknown [K267]

G.S. noted that he had never seen this plant before.

## SELAGINELLACEAE

### **Selaginella peruviana** (Milde) Hieron.

Southwestern United States south to Argentina.

Cuper, 3330 m. Steep wet rock slopes along brook.

Name and use not recorded [D1810]

### **Selaginella** sp. (inarticulate group)

Pirqa Kachun, 3600 m. Under a large rock on side of a small watercourse.

*kiru kiru pasto* (Qu., *kiru*, 'tooth'; Sp., *pasto*, 'forage') [K293]

Plant has no use except as sheep fodder (C.R.).

### **Selaginella** sp. (inarticulate group)

Cuper, 3450–3550 m. On moist rocks along stream in quebrada.

Name and use unknown (G.P.) [D1485]

## THELYPTERIDACEAE

### *Thelypteris glandulosolanosa* (C. Chr.) Tryon

Ecuador, Peru and Bolivia.

Cuper, 3450–3600 m. Terrestrial fern in wet creek draw, and along stream in quebrada above Puqpuq waterfall.

*raki raki* (Qu., *raki*, 'divided') [D1462, D1483]

Leaves are used in the process of fermentation of sprouted corn (Sp., '*jora*') for maize beer (Sp., '*chicha*'), to line fermentation pit and to cover sprouting corn (N.C., G.P.). Used for decoration at Christmas time (G.S.).

### *Thelypteris nitens* (Desv.) Tryon

Ecuador and Peru.

Cuper, 3360–3450 m. On moist wall of Puqpuq waterfall.

*mayupi raki raki* (Qu., *mayupi*, 'in the running water'; *raki*, 'divided') (S.J.) [D1740]

*raki raki* (Qu., *raki*, 'divided') (B.G.) [D1797]

Name and use not recorded [D1788]

Use unknown (B.G., S.J.).

### *Thelypteris rufa* (Poiret) A. R. Smith

Ecuador to Bolivia.

Ayllu Punqu, 3800 m. Fern in moist soil at edge of stream around potato fields.

*raki raki* (Qu., *raki*, 'divided') [K135]

Leaves are used in the process of fermentation of sprouted corn (Sp., '*jora*') for maize beer (Sp., '*chicha*'), to line fermentation pit and to cover sprouting corn (G.S.).

## EQUISETACEAE

### *Equisetum bogotense* H.B.K.

Venezuela to Peru.

Cuper, 3450–3550 m. In wet soil along creek in quebrada above waterfall.

*cola de caballo* (Sp., 'horsetail') [D1478, D1814]

The entire plant is made into a tea for waist-area ache (G.P.). The fresh plant is sold in the Chinchero Sunday market.

## LYCOPODIACEAE

### *Lycopodium clavatum* L.

Temperate and boreal regions of northern

hemisphere tropics of Old and New World.

Cuper, 3300 m. In Hatun Wayq'u quebrada, place called Kiqtuyuq.

*wiñay wayna-china* (Qu., *china*, 'female') [F280]

Plant said to be female of F281. Use unknown.

### *Lycopodium clavatum* L. ssp. *contiguum* (Klotzsch) Øllgard

Andean South America.

Cuper, 3300 m. Creeping herb among *ichus* (Qu., 'high-altitude grasses') on steep dry slopes of Antakillqa hill, in quebrada called Hatun Wayq'u.

*wiñay wayna-china* (Qu., *china*, 'female') [F285]

Plant is said never to flower. Only use is in making Christmas scenes.

### *Lycopodium crassum* Willd. vel aff.

Southern Mexico to Panama, Andean South America south to Peru.

Cuper, 3300 m. In Hatun Wayq'u quebrada, place called Kiqtuyuq.

*wiñay wayna-urqu* (Qu., *urqu*, 'male') [F281]

Plant said to be "male" of F280. Use unknown.

### *Lycopodium* sp. aff. *L. hartwegianum* Spring

Southern Mexico to Costa Rica; Andes from Venezuela to Peru.

Cuper, 3330 m. Herb hanging from steep wet rocks by brook.

Name and use not recorded [D1803]

## GYMNOSPERMS

## EPHEDRACEAE

### *Ephedra americana* Humb. & Bonpl. ex Willd.

Ecuador to Argentina.

Cuper, 3700 m. Shrub on cliff.

*pinku pinku* (Qu.) (N.C., G.S.) [D1417]

*naranja naranja* (Qu. from Sp., *naranja*, 'orange') (N.C., G.S.) [D1417]

Latter name refers to the plant's small orange fruits (G.S.). Drunk as a tonic (Sp., *refresco*) and as a tea, possibly to help the kidneys (N.C.).

### *Ephedra rupestris* Benth.

Cuper, 4000 m. Among moss on rock on An-



takillqa hillside at place called Unu Ur-phuyuq.  
*pampa pinku pinku* (Qu., *pampa*, 'low-growing') [F305]  
Used to make a tea to treat lung problems (T.L.).

Name and use not recorded [D1717]  
*phalcha* (Qu.) possible name (G.A.) [D1717]  
Resembles *puya puya* (Qu.) (S.J., G.S.).

## ANGIOSPERMS

### AMARANTHACEAE

#### *Alternanthera caracasana* H.B.K.

Mexico, West Indies, Colombia, and Venezuela south to Bolivia.  
Plaza of Chinchero, 3810 m. Low spreading herb among packed grasses.  
*kupalvu* (Qu.?) [F261]

Taken in tea at childbirth; tea made from unwashed herb with dirt adhering to roots (S.J., G.S.). Plant can also be used to treat 'fright' (Sp., *susto*) or falls if they cause problems (S.J., G.S.).

#### *Gomphrena elegans* C. Martius

Peru and Bolivia.  
Cuper, 3370 m. Herb on steep brushy hillside.  
*payqu* (Qu.) [D1734]  
Common herb used as condiment in cooking (S.J.).

#### *Iresine celosia* L.

Widespread tropical American weed.  
Cuper, 3450 m. Herb below waterfall.  
*payqu* (Qu.) (G.A., G.S.) [D1737]  
Name and use unknown (S.J.) [D1737]  
Used as condiment in cooking (G.S.).  
Leaves taken in tea for upset stomach (Sp., *cólicos*) (G.S.).

### AMARYLLIDACEAE

#### *Agave americana* L.

Native to Mexico; widely cultivated.  
Along trails throughout Chinchero except at higher altitudes.  
*paqpa* (Qu.) not collected  
Plant is encouraged for its function as a fence.

#### *Alstroemeria pygmaea* Herbert

Southern Peru, Bolivia, Patagonia.  
Cuper, 4500 m. Herb on hilltop in puna.

#### *Bomarea andimarcana* (Herbert) Baker

Peru.  
Tauca, 4050–4250 m. Herb on rocky slopes (D1534A).  
Cuper, 3750 m. Erect herb on lands belonging to San Juan below ruins (F264).  
*ramos ramos* (Qu., from Sp. *ramo*, 'bouquet') (L.H.) [D1534A, F264]  
*varilla varilla* (Qu., from Sp. *varilla*, 'little rod') (G.S.) [D1534A]  
Use unknown (L.H.). Sweet stems of erect variety are chewed like *caña* (Sp., sugar cane) or corn stalks by shepherds, after stripping off the leaves (G.S., S.J.). Young children compete to find them (G.S.).

#### *Bomarea dulcis* (Hook.) Beauv.

Peru and Bolivia.  
Tauca, 4000–4200 m. Herb on cliffs.  
*ramos ramos* (Qu., from Sp. *ramo*, 'bouquet') (G.S.) [K191, D1534B]  
*ramos de la quebrada* (Sp., 'ramos from the canyon') (T.H.) [K191]  
Sweet stem is eaten (T.H.). Use unknown (G.S.).

#### *Bomarea dulcis* (Hook.) Beauv. vel sp. aff.

Cuper, 3750 m. In large pockets of rich earth in rock outcrop above Chinkana.  
Name unknown [F349B]  
Tubers not edible (G.S.).

#### *Bomarea ovata* (Cav.) Mirbel

Peru and adjacent parts of Bolivia.  
Cuper, approx. 3500 m. Antakillqa hillside, place called Tasakurana.  
*ramos ramos* (Qu., from Sp. *ramo*, 'bouquet') [F268A, F268B]  
Edible fruits; kids eat and play with them.

#### *Bomarea* sp.

Ayllu Punqu, 3700 m. Herb on rock outcrop.  
Cuper, 3810 m. Herb on grazed hillside.  
*ramos ramos* (Qu. from Sp., *ramo*, 'bouquet') [D1374, D1448]  
Plant has no use (G.P.). Shepherd children eat the sweet stem of this plant (as they also eat cornstalks) (G.S.).

**Hypoxis decumbens** L.

Widely distributed in tropical America.

Ayllu Punqu, 3800 m.

Yanacona, 3750 m. Place called Q'allas.

*khuchi khuchi* (Qu., *khuchi*, 'pig') [K130, F256]

Children play games with black tuberous roots, pretending the roots to be little pigs (T.H.). Use unknown (G.S.).

Cuper, 3500-3600 m. Herb on dry, rocky pastured slopes.

Name unknown (N.C., B.G.) [D1652]

*uchu kaska qhuracha* (Qu., *qhura*, 'herb') (B.G.) possible name [D1652]

Use unknown (N.C., B.G.).

**Stenomesson incarnatum** (H.B.K.) Bak.

Peru, Ecuador.

Cuper, 3810 m. Herb cultivated in house garden.

*chiwanway* (Qu.) [K104]

Flowers used in bouquets and table decorations (G.S.). Sold in Chinchero Sunday market.

**Stenomesson recurvatum** (Ruiz & Pavón) Baker

Peruvian Andes.

Yanacona, 3810 m. Herb transplanted to garden.

*chiwanway* (Qu.) [K113]

Grown as decorative plant. Flowers are collected and worn on hats. Also called *qhilla t'ika* (Qu., *qhilla*, 'lazy'; *t'ika*, 'flower') because it doesn't flower in the rainy season as most plants do, but rather only in the dry season (S.J., G.S.).

**ANACARDIACEAE**

**Schinus molle** L.

Ecuador to Chile, also widely cultivated.

Urquillos, 3100 m. Tree along trail.

*molle* (Sp.) [K320]

Fruits used as peppery condiment in cooking (uncommonly in Chinchero) (U.I.). Wood used as firewood.

**ASCLEPIADACEAE**

**Cynanchum tarmense** Schltr.

Peru.

Cuper, 3600 m. Vine on steep slopes and along trail above quebrada at place called Chaqchakillay.

*ambar ambar* (Qu., from Sp. *ambar*, 'amber') (N.C., G.S.) [D1458, F270]

*cabra cabra* (Qu. from Sp., *cabra*, 'goat') alternate name (N.C.) [D1458]

Leaves and stems are boiled; the decoction is used to bathe the head as a remedy for headache and fever caused by 'wind in the head' (N.C.). A "cool" (Sp., *fresco*) plant, which is boiled in the evening, then used to wash the head the following morning to treat ailments such as *sirenasqa* (Qu. from Sp., 'contamination by a siren spirit') (G.S.). Used to bathe children against damage caused by fright (Sp., '*susto*'), and to reduce tonsil inflammation (G.S.). B.G. boiled the plant, squeezed the juice and used it to wash her hair as an anti-dandruff agent (S.J., G.S.).

**Metastelma** sp.

Cuper, 3450-3550 m. Herb on lightly grazed slopes.

*pimpinilla* (Qu., from Sp., *pimpinela*, 'burr-net') suggested name (G.S.) [D1512]

*p'isqu sisaq* (Qu., *p'isqu*, 'five') suggested name (B.G.) [D1512]

Use unknown (B.G., G.S.). Steeped as tea drunk to treat stomachache (Qu., *sunqu nanay*) (S.J., G.S.).

**Sarcostemma lysimachioides** (Wedd.) R. Holm

Central and Southern Peru.

Yanacona, 3750 m. Creeping herb on ground on hillside near Pirqa Kachun at place called Q'allas.

*waka waka* (Qu., from Sp. *vaca*, 'cow') [F254]

**Sarcostemma solanoides** (H.B.K.) Decne.

Peru, Bolivia, and Chile.

Cuper, 3450-3500 m. Herb on lightly grazed slopes.

*ambar ambar* (Qu., from Sp. *ambar*, 'amber') [D1495]

Use unknown (G.S.).

**BASELLACEAE**

**Boussingaultia diffusa** (Moq.) Hauman

[*Anredera diffusa* (Moq.) Sperling, comb. nov. ined.]

Colombia to Peru.

Cuper, 3150 m. Vining herb on steep slope.

Name and use unknown (B.G., Am.Q., P.P., G.S.) [K243]

Pirqa Kachun, 3000–3330 m. Vining herb on dry hillside.

Name and use unknown [K305]

Similar to *lisas* (Qu., *Ullucus tuberosus*) and also to *willq'u* (Qu., 'vine'; refers in Chinchero to at least seven vining species), a name heard in Urquillos (Am.Q., G.S.). Not *willq'u* (P.P., B.G., Am.Q., G.S.).

*Boussingaultia* sp. aff. *diffusa* (Moq.) Volkens

[*Anredera diffusa* (Moq.) Sperling, comb. nov. ined.]

Peruvian Andes.

Cuper, 3810 m. Vine transplanted from wild habitat and cultivated on stone wall in house courtyard.

*verguylawas* (Qu. from Sp., *verdolaga*, 'purslane,' *Portulaca oleracea* L.) [K202]

Plant is ground and made into a poultice, which is applied to the cheek with a piece of white paper to treat toothache (L.P.). Owner's grandfather transplanted the plant to this yard many years ago because it was considered such a useful plant (L.P.).

*Ullucus tuberosus* Caldas (fig. 19)

Southern Venezuela to northern Argentina.

Native to the Andes, domesticated from wild species.

Pukamarca, 3800 m. Herbs cultivated for edible tuber by Jo.C. in his fields at edge of Lake Piuray.

*zanahoria lisas* (Sp., *zanahoria*, 'carrot') (Jo.C.) [K156]

*qhillu chuqcha isas* (Qu., *qhillu*, 'yellow'; *chuqcha*, 'hair') [K156]

Tubers yellow (Jo.C.). Stems reddish.

*papas lisas* (Sp.) [K157]

Tubers round and white with red spots (Jo.C.). *Papas lisas* include *arequipa lisas* and *puka papan lisas*.

*arequipa lisas* (Sp., *Arequipa* is a Peruvian city) [K158]

Tubers round and yellow, like oranges, though smaller (Jo.C.).

Taucca, 3900 m. Herb cultivated for edible tuber.

*arequipa lisas* (Sp., *Arequipa* is a Peruvian city) [K237]

This variety was said to have been grown in the Chinchero area for only three to four years and was originally purchased in the Cusco market (U.I.).

*phantasma lisas* (local Sp., *fantasma*, 'ghost') (U.I.) [K235]

Tubers roundish and yellow-orange with red dots.

*tiqtiharo lisas* (Qu.) (U.I.) [K236]

Tubers long and white with pink-red blotches and dots.

*yuraq lisas* (Qu., *yuraq*, 'white') (U.I.) [K234]

Tubers long, curved, and white with a few small pink blotches.

*zanahoria lisas* (Sp., *zanahoria*, 'carrot') (U.I.) [K233]

Tubers rounded, oblong, orange-yellow when mature.

*puka papan lisas* (Qu., *puka*, 'red'; *papan*, 'potato') not collected

Said to be very large tubers cultivated on Antakillqa hill.

G.S. and S.J. pointed out the distinction that the stems of *tiqtiharo lisas* (K157 and K236) are long and thin, while those of *papas lisas* are shorter and fatter. They added that tubers can grow round like a cabbage, or can grow to be six inches long, but the leaves are not resistant to frost and other attacks. K234 is a kind of *tiqtiharo*, although M.L. calls them *yuraq* (Qu., 'white').

The name *lisa*, or *papa lisa*, is from the Spanish, *liso*, 'smooth', a reference to the slippery texture of the cooked vegetable. People in Chinchero recognize the Quechua word *ulluqu* in reference to this crop, but do not use it except in occasional reference to wild varieties. They judge that *lisa* is a Quechua word and *ulluqu* is Spanish, whereas linguists judge the reverse to be true.

All *lisas* are planted in September, harvested in May–June (Jo.C.). With one exception, all varieties are traditional local cultivars; that is, although seed tubers may be bought in other parts of Peru, notably Paucartambo, Chinchero people never get seed of 'improved varieties' from the Ministry of Agriculture (Jo.C.). *Llinlli* (freeze-dried tubers) can be made from any variety (Jo.C.). The only fertilizer used is domestic animal manure (Sp., *guano de corral*) (Jo.C.). *Lisas* are subject to no diseases except wet rot (Qu., 'kiyuqk'a') (Jo.C.). *Arequipa lisas*, the only recently introduced cultivar, are said to be particularly affected by *kiyuqk'a* (alternately



FIG. 19. Woman displays *lisas* (*Ullucus tuberosus*) for sale or barter in Chinchero Sunday market. She has graded them according to size and variety in order to meet buyers' functional and aesthetic preferences (photo C.S.).

*kipqi*) which causes the plants to turn black and die after growing for only four months.

Although we heard rumors in Chinchero that people were breeding *lisas*, these were unsubstantiated. The existence of seeds following the flowers of *Arequipa lisas*, first pointed out to us by L.H., confirmed the potential for more complex selection activity. The collection includes all *Ullucus* cultivars known to residents in 1982, and all varieties but one (*Arequipa lisas*) are traditional (Sp., *antiguo*) landraces.

Cuper, 3000–3900 m. Feral vines on rocky scree slopes of Antakillqa hillside.

*atuq lisa* (Qu., *atuq*, 'fox'; *lisa*, *Ullucus*) (G.P.) [D1775]

*atuq ulluqu* (Qu., *atuq*, 'fox') (L.P.) [D1681]

Name unknown (G.P.) [K211]

These varieties are not cultivated and have no use (G.P., L.P.). These examples are similar in appearance to *q'illu lisas* (Qu., *q'illu*, 'yellow') which

are no longer planted because they do not produce tubers (S.J., G.S.).

Ayllu Punqu, 3810 m. Vining on wall of house courtyard.

*atuq lisas* (Qu., *atuq*, 'fox'; *lisa*, *Ullucus*) [F321]

*atuq ulluqus* (Qu., *atuq*, 'fox'; *ulluqus*, *Ullucus*) [F321]

Forms tubers up to 2 cm long that are not edible (S.J., G.S.). A cool (Sp., *fresco*) plant (S.J., G.S.). Ground to make a poultice for aches of teeth, tonsils (S.J., G.S.).

## BEGONIACEAE

### *Begonia clarkei* Hook. f.

Andes of southern Peru and Bolivia.

Cuper, 3600 m. Herb on steep slope.

*achanqharas* (Qu.) (AC, N.C., S.J., G.S.) [D1443]

While pasturing, children peel and eat epidermis of leaves (as they do strawberries) (N.C.). Flowers used for decoration; roots possibly used for remedy (G.S.). As children, we squeezed the juice of this plant and mixed it with that of *trago trago*, to make ourselves drunk (S.J., G.S.). The whole plant is squeezed with *chili chili* (Qu., *Geranium* and other spp.) and given to babies with fever, when their tongues turn white (S.J.). Flowers can be pink, red, or white (S.J., G.S.).

## BERBERIDACEAE

### *Berberis boliviana* Lechler

Southern Peru and Bolivia.

Cuper, 3600 m. Woody shrub on steep grazed hillside.

*qhishwa ch'iqchi* (Qu., *qhishwa*, 'warm place'; *ch'iqchi*, 'colors combined with spots') [D1730]

Spiny shrub encouraged to grow in living fences (G.S.). Stems are made into spindles and are used for firewood (S.J.).

### *Berberis cliffortioides* Diels

Central and southern Peru.

Cuper, 3810 m. Shrub along trail.

*ch'iqchi* (Qu., 'colors combined with spots') [D1356]

Consumed as a tea to treat measles, *escarlantina* (Sp., 'scarlet fever') (G.P.). Used to treat illnesses of children (L.H.). Root provides a yellow dye (T.H.). This variety, *ch'iqchi*, which is from Chinchero center, is distinguished by its long spines from *qhishwa ch'iqchi* (S.J., G.S.). Fruits are eaten, as are those of *mullaka*; they dye the tongue purple (S.J., G.S.). Dye experiments with this plant got no results (S.J., G.S.).

### *Berberis saxicola* Lechler

Southern Peru.

Tauca, 4050–4250 m. Shrub on steep rocky slope.

*upa ch'iqchi* (Qu., *upa*, 'deaf mute,' or in this instance, 'thornless'; *ch'iqchi*, 'colors combined with spots') [D1560]  
*qhishwa ch'iqchi* (Qu., *qhishwa*, 'warm place'; *ch'iqchi*, 'colors combined with spots') alternate name [D1560]

Used to make living fences (G.S.). *Qhishwa ch'iqchi* (D1560 and D1730) is distinguished by its larger leaves and shorter spines from *ch'iqchi* (S.J., G.S.).

## BIGNONIACEAE

### *Tecoma stans* (L.) Juss. ex H.B.K.

Florida to Mexico, south to Argentina.

Cuper, 3300–3450 m. Woody shrub along brook (D1754) and along trail (D1758).  
*waranway* (Qu.) [D1754, D1758]

Name and use unknown (S.J.) [D1754]

Wood used to make potato hooks (English, 'tools for harvesting potatoes') and foot plows (Qu., *chakitaqllas*) (G.P., G.S.).

## BORAGINACEAE

### *Allocarya humilis* (Ruiz & Pavón) E. Greene

Peru and Bolivia.

Tauca, 4000–4250 m. Spreading herb on steep, rocky, grazed slopes.

Name and use unknown (G.S.) [D1525, K182]

### *Amsinckia hispida* (Ruiz & Pavón) I. M. Johnston

Ecuador to Chile and Argentina.

Cuper, 3810 m. Along trail.

Name unknown (G.P.) [D1369]

*ambrosacha qhura* (Qu., from Sp. *ambro-*

*sia*: Qu., *qhura*, 'herb') possible name (G.P.) [D1369]

Plant has no use (G.P.).

**Hackelia revoluta** (Ruiz & Pavón) I.M. Johnston  
Peru to Argentina through the Andes.

Cuper, 3100–3600 m. Herb on steep rocky slopes and on banks of brook.

Name and use unknown (N.C., B.G., Am.Q., P.P., G.S.) [D1671, D1816, K258]

Similar to *supay kayqu* (Qu., locally *Nicotiana glauca*); not drunk (B.G.).

**Heliotropium incanum** Ruiz & Pavón

Peruvian Andes.

Cuper, 3100–3150 m. Herb on somewhat dry slope with large rocks.

Name and use unknown (B.G., Am.Q., P.P., G.S.) [K256]

Leaves similar to those of *ñuqchu* (Qu., *Salvia* spp.) (B.G., Am.Q., G.S.).

**Lithospermum peruvianum** A. DC.

Ecuador to southern Peru.

Yanacona, 3800 m. Herb in dry, hard-packed soil on pastured rocky slopes.

*purun perejil* (Qu., *purun*, 'fallow'; Sp., *perejil*, 'parsley') (B.G.) [K131]

Name unknown (T.H., Am.Q., P.P., G.S.) [K131]

Use unknown (B.G., T.H., Am.Q., P.P., G.S.).

## BROMELIACEAE

**Puya ferruginea** (Ruiz & Pavón) L. B. Smith

Ecuador to Bolivia, 1800–3800 m.

Cuper, 3350–3550 m. Terrestrial bromeliad among rocks on steep slope in quebrada and on Antakillqa hillside.

*achupaylla* (Qu.) (G.P., G.S.) [D1488, D1774]

Leaves gathered for guinea pig fodder (G.S.).

**Puya weberbaueri** Mez

Southern Peru and northwestern Bolivia, 2800–4000 m.

Cuper, 3500–3600 m. Bromeliad on steep rocky slopes of Antakillqa hillside.

*awarunkhu* (Qu.) (G.A., N.C., B.G., G.S.) [D1647]

Collected for cattle feed and guinea pig fodder (G.A.). *Llipta* (Qu., 'alkaline admixture for coca chewing') is made from the dried flowers of this plant

(Qu., *tañu*), which are burned to ashes with *isphinhuy* (Qu.) on hill-sides by shepherds (G.S.).

**Tillandsia capillaris** Ruiz & Pavón

Peru to Argentina.

Yanacona, 3810 m. On face of rock.

*qaqa sunkha* (Qu., *qaqa*, 'rock'; *sunkha*, 'beard') (G.S.) [D1399]

*fosforo fosforo* (Qu., from Sp., *fósforo*, 'match') (N.C.) childhood name [D1399]

Name unknown (Al.Q.) [D1399]

Use unknown (N.C., G.S.). Similar to *salvahina* (Qu.), used to treat cough (Al.Q.).

**Tillandsia nana** Baker

Peru and Bolivia, 2900–3500 m.

Cuper, 3300–3500 m. Hanging on rock faces on Antakillqa hillside.

*urqu wiñay wayna* (Qu., *orqo*, 'hill'? 'male?'; *wiñay*, 'to live'; *wayna*, 'youth') (G.P.) [D1772]

Name unknown (G.P.) [K210]

Use unknown (G.P.).

**Tillandsia oroyensis** Mez

Southern Ecuador to Peru, 800–3400 m.

Cuper, 3300–3450 m. On rock face along brook in quebrada.

*wayq'untuy* (Qu.) [D1752]

Similar to *awarankhu* (Qu., *Puya weberbaueri*); water that accumulates in plant is drunk for thirst (S.J.).

**Tillandsia recurvata** (L.) L.

Southernmost United States to Argentina.

Cuper, 3100–3150 m. On tree.

*qaqa sunkha* (Qu., *qaqa*, 'rock'; *sunkha*, 'beard') (Am.Q., P.P., G.S.) [K238]

*salvia del cerro* (Sp., 'sage of the hill') (T.H.) alternate name [K238]

Name and use unknown (B.G., G.P.) [K238]

Useful only as decoration (P.P.). Use unknown (T.H.).

**Tillandsia usneoides** (L.) L.

Southern United States to Central Argentina and Chile.

Cuper, 3350–3500 m. On rock face, on Antakillqa hillside (D1769) and above Puqupuq waterfall (D1742).

*salvahina* (Qu., from Sp. *salvia*, Qu. *-hina*, '-like') (G.S.) [D1742]

*salwahi* (Qu.) (B.G.) [D1769]

*wihuhu* (Qu. from Sp., *bejuco*, 'vine') (G.P.) [D1769]

Gathered at Christmas for use in Nativity scenes to make a bed for the Christ figure (G.S.). Sold in streets in Cusco at Christmas. Placed in nests in chicken houses as nesting material (B.G.). Use unknown (G.P.).

## CACTACEAE

### *Erdisia* aff. *erecta* Backeb.

Southern Peru.

Cuper, 3450–3700 m. Cactus along trail and on lightly grazed slopes.

*aña panqu* (Qu.) (G.P.) [D1425]

*khishqa* (Qu., 'plant with spines') (G.P.) [D1493]

*huwisk'i* (Qu.) alternate name (G.S.) [D1493, D1425]

Use unknown (G.P., G.S.). One informant reported, perhaps jokingly, that the juice of the fruit of this plant was an intoxicant (G.S.).

### *Lobivia* aff. *backebergii* (Werderm.) Backeb. spp. *hertrichiana* (Backeb.) Rausch ex G. Rowley

Southeastern Peru.

Tauca, 4050 m. On adobe wall by house.

*aña panqu* (Qu.) [D1590]

Use unknown (G.S.).

### *Opuntia* aff. *floccosa* Salm-Dyck or *O. lagopus* Schumann

Both species in the high Andes from central Peru to central Bolivia.

Cuper, 4500 m. Cactus forming low mats on hilltop.

*ruq'a* (Qu.) (G.A., L.P.) [D1699, D1700]

*q'ara ruq'a* (Qu., *q'ara*, 'skin') (B.G.) [D1699]

*inka ruq'a* (Qu.) (B.G.) [D1700]

Used as poultice for toothache (G.A.).

*Inka ruq'a* is useful with egg and *trago* (Sp., 'cane alcohol') to externally bathe upset stomachs (B.G.). *Q'ara ruq'a* was said by B.G. to have no use, as were both varieties by L.P. B.G. distinguished the varieties by the smooth, hairless form of *q'ara ruq'a*.

### *Opuntia* aff. *subulata* (Muehlenpf.) Engelm.

Origin uncertain, perhaps Argentina. Widely cultivated.

Cuper, 3600–3800 m. Grown in hedgerows

and on Antakillqa hillside at place called Tanqar Qhasa.

*k'aqlla* (Qu.) [D1459, F317]

Use unknown (G.S.). Plants had been moved to form a fence around a field. The fruits of this cool (Sp., *fresco*) plant are edible; interior of fruits and leaves are ground to make a poultice for toothaches or tonsils (S.J.). Spines used as tooth- and earpicks (S.J., G.S.).

### Genus indet.

Cuper, altitude unknown. Scattered on steep slope of Antakillqa hillside, place called Ch'ampatakana.

*aña panqu* (Qu.) [F318]

Fruits edible and said to be very sweet (U.I.).

### Genus indet.; probably *Opuntia*

Ayllu Punqu, 3810 m. On wall of house courtyard; said to have been transplanted 40 or 50 years ago.

*aña panqu* (Qu.) [F319]

Fruits edible (U.I.).

## CALYCERACEAE

### *Acaicarpa procumbens* Less.

Southern Peru, Brazil, Argentina.

Ch'usu, 3800 m. Herb along trail.

*estrella khishqa* (Sp., *estrella*, 'star'; Qu., *khishqa*, 'spiny plant') [K274]

Plant is made into a tea for altitude sickness (G.P.).

### *Moschopsis* sp.

Cuper Alto, 4650 m. Above place called Mar-garitayuq. Herb in red sand on rock.

*lluthu lluthu* (Qu.) possible name [F316]

Name and use unknown [F316]

## CAMPANULACEAE

### *Lobelia tenera* H.B.K.

In the Andes from Venezuela to southern Peru.

Cuper, 3500–3800 m. Small herb on grassy slope of Antakillqa hillside (K286); among *ichus* in moist soil (F354) at Simp'il; herb between stones in Inca wall in Inca ruins below Chinchero plaza (F356).

*violetas* (Sp.) (C.R.) [K286]

*puna violetas* (Qu., *puna*, 'high area'; Sp.) (P.P.) [K286]

*maransiras* (Qu.) possible name  
(C.R.) [K286]  
*pavitos* (Qu.) (B.G.) [K286]  
Name unknown (Am.Q.) [K286]  
Name and use unknown [F354, F356]  
Used to make a tea for coughs (Am.Q.,  
C.R., P.P.). Use unknown (B.G.).

**Lysipomia laciniata** A. DC. var. **laciniata**  
Southern Peru and Bolivia.

Tauca, 4050–4250 m. Herb among mossy  
rocks on steep slopes above community.  
*pampa haminqay* (Qu., *pampa*, ‘flat open  
place’) [D1548]  
Name unknown (G.S.) [D1548]  
Use unknown (L.H., G.S.).

**Lysipomia laciniata** A. DC. var. **vulgaris** (Wedd.)  
E. Wimm.  
Peru and Bolivia.

Cuper, 4500 m. Herb on summit of Anta-  
killqa hill.  
*sutuma* (Qu.) [D1710]

This variety of *sutuma* is said to be fe-  
male (Sp., *hembra*) (L.P.). A tea is  
made from the whole plant for the  
kidneys (G.A., L.P.).

**Siphocampylus tupaiformis** A. Zahlbr.  
Southern Peru and Bolivia.

Pirqa Kachun, 3620 m. Herb in fallow field.  
*lakre* (Qu. from Sp., *lacre*, ‘red’) (P.P.)  
[K317]  
*colondrina* (Sp.?) (P.P.) alternate name  
[K317]  
*velapi ñuqchu* (Qu. *velapi*, ‘orange’)  
(C.R.) [K317]  
*saqraq ñuqchu* (Qu., *saqraq*, ‘devil’s’)  
(Am.Q., G.S.) [K317]  
*china china* (Qu.) (Am.Q., G.S.) possible  
name [K317]  
Used for decoration (C.R.), and as a tea  
for intestinal blockage (Sp., *cólico*)  
(P.P.). Use unknown (Am.Q., G.S.).

**Wahlenbergia peruviana** A. Gray  
Peru and Bolivia.

Tauca, 4000–4280 m. In gravelly soil on ex-  
posed slopes.  
Name and use unknown (O.H.) [K225]  
*taruqa ñuñu* (Qu., *taruqa*, ‘deer’; *ñuñu*,  
‘breast’) (B.G.) [K225]  
Has sweet milk, but no known use (B.G.).

## CANNACEAE

### **Canna × indica** L.

Native to South America. Widely cultivat-  
ed in the tropics.  
Cuper, 3200 m. Cultivated in small open field  
in warm quebrada.  
*achira* (Qu.) [K212]

Cultivated experimentally for edible un-  
derground portions (G.P.). L.P.  
planted *achira* in his low, warm corn  
field as an experiment to determine  
whether or not he could make it grow  
in Chinchero. His interest in plant-  
ing a wide range of cultigens was  
challenged by this crop which is con-  
sidered impossible to grow at such a  
high altitude. Ultimately, he decided  
that while not impossible, it was not  
worth the effort.

## CAPRIFOLIACEAE

### **Sambucus peruviana** H.B.K.

Peru to Argentina, Central America.  
Cuper, 3810 m. Tree along trail.  
*sauk’u* (Qu.) (G.P., G.S.) [D1342]

Leaves are mixed with leaves of *markhu*  
(*Ambrosia artemisioides*) in a pot and  
toasted (heated without water); the  
juice that gathers on the bottom of  
the pot is rubbed on the belly to treat  
stomachache (G.P.).

## CARYOPHYLLACEAE

### **Arenaria** aff. **digyna** Schldl.

Southern Peru, Chile to Bolivia, Mexico.  
Yanacona, 3800 m. Low herb in hard packed  
soil on rocky slope.  
*p’isqu sisan* (Qu., *p’isqu*, ‘five’) [K132]  
Use unknown (G.S.). Fodder (T.H.).

### **Arenaria lanuginosa** (Michaux) Rohrb.

Southeastern United States south to Boliv-  
ia.  
Cuper, 3450–3550 m. Herb above waterfall  
on rocky slopes.  
*p’isqu sisaq* (Qu., *p’isqu*, ‘five’) [D1475,  
F272A]  
Plant is given as a tea to women who  
menstruate at the wrong time in or-  
der to make them regular (G.S.).



Yanacona, 3810 m. Herb on rock outcrop.  
Name and use unknown (G.S.,  
N.C.) [D1401]  
N.C. recalled that her mother had recommended this plant to her as something to give to your children so that they are less hungry.

**Cerastium tucumanense** Pax

Southern Peru to Chile and Argentina.  
Tauca, 4050–4250 m. Herb on steep rocky slopes.  
*p'isqu sisan* (Qu., *p'isqu*, 'five') (L.H.) [D1556]  
Use unknown (L.H.). Probably not *pisq'u sisaq* (G.S.).

**Dianthus barbatus** L.

Native from the Pyrenees to the Balkan peninsula, naturalized in China and North America. Widely cultivated elsewhere.  
Cuper, 3810 m. Cultivated in house garden.  
*clavel* (Sp., 'carnation') [K111]  
Flower used as table decoration (T.H., G.S.).

**Paronychia chilensis** DC.

Mexico to Chile.  
Cuper, 3810 m. In cracks of large rock outcrop called Maranqaqa in Inca ruins.  
Name and use unknown (G.S.) [D1391]

**Paronychia mandoniana** Rohrb.

High Andes of Peru and Bolivia.  
Cuper, 4500 m. On summit of Antakillqa hill.  
*p'isqu sillum* (Qu., *p'isqu*, 'five'; *sillum*, 'fingernail') [D1718]  
Use unknown; in August, this plant has sharp bristles (G.A.).  
Tauca, 4050–4250 m. Steep rocky slopes.  
Name and use unknown (G.S.) [D1544]

**Silene chilensis** (Naudin) Bocq.

Peru and Chile.  
Yanacona, 3800 m. Plant on rocks and dry pastured slopes.  
Name and use unknown (B.G., Am.Q., P.P., G.S.) [K125]  
Similar to *phalcha* (Qu.) (Am.Q., G.S.).  
Similar to *verbena* (Sp.) (B.G.).

**Silene mandonii** (Rohrb.) Bocq.

High Andes of Peru and Bolivia.  
Tauca, 4050–4250 m. Herb on steep rocky slopes.

Name and use unknown (G.S.) [D1542]  
*yawar ch'unqa* (Qu., *yawar*, 'blood'; *ch'unqa*, 'suck') [D1542]  
Leaves are used as a poultice on blows and wounds, especially on the hands (B.G.).

**CHENOPODIACEAE**

**Chenopodium ambrosioides** L.

Widely distributed tropical American weed. Naturalized in Europe and North America.  
Yanacona, 3800 m. Herb near building in town.  
*payqu* (Qu.) [D1674]  
Ubiquitous weed is used as a condiment (Qu., *asñapa*) in cooking (G.A., G.S.).  
Cuper, 3370 m. Erect herb growing along trail on steep hillside grazed by sheep.  
*qhishwa pimpinilla* (Qu., *qhishwa*, 'warm place'; from Sp., *pimpinella*, 'burnet,' *Sanguisorba minor*) [D1734A]  
Abundant weed from the canyon; the whole plant is used to make a tea to treat stomachaches (S.J., L.P., G.S.).

**Chenopodium incisum** Poir.

Southwestern United States, Mexico, Peru to Argentina.  
Chincho. Fresh specimen purchased in Chincho Sunday market.  
*anka payqu* (Qu.) [K311]  
Vendor recommended the use of this plant as tea for stomachache.

**Chenopodium quinoa** Willd.

Colombia to Chile and Argentina.  
Pukamarka, 3800 m. Cultivated in fields bordering Lake Piuray.  
*quinua* (Qu.) [K161, K163]  
*ruyaq quinua* (Qu., *ruyaq*, 'white') [K163]  
Both plants were being cultivated by Jose Cusihaman. K161 was reddish in color.

The achenes of *Chenopodium quinoa* (Qu., *qinua*) contain saponins; these are washed out of the "grain" by repeated rinsing before cooking. Although both "white" (Qu., *ruyaq*) and "red" (Qu., *puka*) varieties are grown in Chincho, they are not seen as having marked differences other than color of flowers and leaves. The leaves of both *Chenopodium quinoa* and *Chenopodium quinoa*



FIG. 20. Woman washing *quinua* (*Chenopodium quinoa*) grains (photo W.D.).

ssp. *mille anum* were said to be eaten as greens, for example in the dish called *llullu hawch'a*, consisting of potatoes, onions, and more commonly, mustard greens (*Brassica campestris*) (fig. 20).

***Chenopodium quinoa* Willd. ssp. *mille anum* (Aellen) Aellen**

Ecuador to Chile.

Cuper, 3840 m. Herb on open rock outcrop called Antasakha.

*khuytu* (Qu., possibly *phuytu*) [K146]

*k'ita quinua* (Qu., *k'ita*, 'feral') [K146]

Cooked like *llullu* (*Brassica* sp. and other greens) in *hawcha* (Qu., a meal of potatoes, greens and onions) (G.P.). The word *qinuwa* can vary to *kiyuña*.

#### COLUMELLIACEAE

***Columellia obovata* Ruiz & Pavón**

Peruvian Andes.

Cuper, 3600–3900 m. Shrub on hillside.



FIG. 21. G.P. assembles stalks of *huamanpito* (*Columellia obovata*) for use in basket-making (photo CCTC).

*wamanpito* (Qu., *waman*, 'eagle')  
(L.P.) [D1685]

*p'ispita* (Qu.) (B.G.) [D1685]

Stems used as material for making baskets (B.G., L.P.) (figs. 21–22).

#### COMMELINACEAE

##### *Commelina tuberosa* L.

Mexico; Peru and Bolivia.

Cuper, 3350–3500 m. On open hillside.

*sara sara* (Qu., *sara*, 'maize') [D1773]

Plant has no use except as sheep fodder (B.G.). Leaves have superficial resemblance to maize seedlings.

#### COMPOSITAE

##### *Ambrosia artemisioides* Miller

Colombia to Bolivia.

Cuper, 3300–3810 m. Herb on floor of quebrada and in field along trail.

*markhu* (Qu.) [D1764, D1343]

Leaves are heated in a pot and then

rubbed on stomach for stomach pain (G.P.).

##### *Aphanactis villosa* Blake

Central and southern Peru.

Tauca, 4000–4280 m. On steep rocky slopes.

Name and use unknown (G.S.) [D1533]

*coca coca* (Qu.) [K224]

Use unknown (O.H.).

##### *Aristeguetia* (*Eupatorium*) *discolor* (DC.) R. King & H. Robinson

Ecuador and Peru.

Cuper, 3450–3700 m. In quebrada and along trail on hillside.

*isphinhuy* (Qu.) [D1452, D1473]

Used as tea to treat cough and other ailments (G.S.).

##### *Artemisia absinthium* L.

Native to Eurasia. Introduced and widely cultivated.

Q'erapata, 3800 m. Shrubby herb at edge of field.

*Santa Lucia* (Sp.) [D1604]



FIG. 22. G.P. uses hands and toe to begin weaving a basket (photo cctrc).

*hanq'as* (Qu.) (N.C., B.G.) possible name [D1604]

Unspecified use, possibly to alleviate intestinal blockages (Sp., *cólicos*) (G.S.). Used to treat twisted ankle and like problems (N.C., B.G.).

Yanacona, 3750 m. Herb from house doorway.

*ahinhus* (Qu., from Sp. *ajenjo*, 'Artemisia sp.') [F344]

Used for tea.

***Baccharis boliviensis*** (Wedd.) Cabrera  
Peru, Bolivia, and Argentina.

Cuper, 3100–3150 m. Shrub among large rocks on slope in quebrada.

*piki piki* (Qu., *piki*, 'flea') [K260]

Use unknown (G.P.).

***Baccharis caespitosa*** (Ruiz & Pavón) Pers. var. ***alpina*** (H.B.K.) Cuatrec.

Colombia to Bolivia.

Tauca, 4050–4250 m. Low shrub on steep rocky slopes.

*pampa tayanqa* (Qu.) (L.H., M.H., G.S.) [D1563]

*puma t'anqa* (Qu.) (G.P.) possible name [D1563]

*phalcha* (Qu.) (G.P.) possible name [D1563]

Possibly used for foot aches (L.H.). Use forgotten (G.S.). Plant has no use (M.H., G.P.).

Cuper, alt. approx. 3900 m. Spreading, creeping herb on steep hillside at place called Unu Urphuyuq.

*pampa tayanqa* (Qu.) [F303B]

Plant has no use (T.L.).

***Baccharis genistelloides*** (Lam.) Pers.

Colombia, Ecuador and Peru.

Cuper, 3500–3700 m. On steep slope.

*qimsa kuchu* (Qu., *qimsa*, 'three'; *kuchu*, 'corner') (C.R.) [K291]

*nudo nudo* (Sp., *nudo*, 'knot' or 'joint') suggested name (P.P.) [K291]

*muqu muqu* (Qu., *muqu*, 'knot' or 'joint') suggested name (Am.Q., G.S.) [K291]

Name and use unknown (B.G.) [K291]

Used to make drink to give to drugged people (Sp., *drogada*, by alcohol) to cure stomachache (C.R.). Plant is ground to make a medicine for (bone) dislocations (Am.Q., G.S.). Use unknown (P.P.).

**Baccharis latifolia** (Ruiz & Pavón) Pers.

Colombia to Argentina.

Cuper, 3800 m. Shrub along trail.

*chilka* (Qu.) [D1431]

Use unknown (G.P., G.S.).

**Baccharis serrulata** Pers.

Peru, Bolivia and Argentina.

Cuper, 3800 m. Shrub in houseyard, not cultivated.

*suytu suytu qhura* (Qu., *suytu*, 'long and pointed'; *qhura*, 'herb') [K204]

No use reported (G.P.).

**Baccharis tricuneata** (L.f.) Pers. var. **robusta** Cuatrec.

Peruvian Andes.

Tauca, 4050–4250 m. Shrub on steep rocky slopes.

*tayanqa* (Qu.) [D1521]

Plant is ground for salve to treat (bone) dislocations, and used for firewood (G.S.).

**Baccharis aff. tricuneata** (L.f.) Pers. (sterile specimen)

Peruvian Andes.

Cuper, alt. approx. 3900 m. Shrub on steep hillside at place called Unu Urphuyuq.

*tayanqa* (Qu.) [F303A]

Leaves compared to those of *pampa tayanqa* (F303B) (T.L.).

**Barnadesia berberoides** Schultz-Bip. (vel aff.)

Cuper, 3700–3810 m. Shrub on large eroded rock and on terrace edges in Inca ruins, and on steep hillside.

*llawlli* (Qu.) [D1375, D1422, F358]

*hallu hallu* (Qu.) alternate pronunciation (G.P.) [D1422]

The leaves are chewed like coca or made into tea (N.C.). The plant is used to treat *escarlatina* (Sp., 'scarlet fever') (U.I.). Use unknown (M.C., S.J., T.L., G.S.). G.P. corroborated the name but said that the plant had no use. The bright magenta color of the flowers of this plant is called *llawlli*

in describing dyed yarn and other artifacts.

Cuper. Woody shrub on lower slope of Antakillqa hillside at place called Tasakuranaladunpi.

*ruyaqa llawlli* (Qu., *ruyaqa*, 'white') [F289]

Plant has no use (T.L.). Plant has white flowers.

**Bidens andicola** H.B.K.

Colombia to Argentina.

Cuper, 3600 m. Steep shrubby hillside grazed by sheep.

*qhishwa kiku* (Qu., *qhishwa*, 'warm place') (G.S.) [D1732]

*kiku* (Qu.) (S.J.) [D1732]

Possible use as dye (G.S.). Eaten by cattle (S.J.). Small leaves indicate that plant came from area lower than Chinchero center (S.J.).

Qorikancha, 3700 m. Fallow field in open area along paved road.

*kiku* (Qu.) [F342B]

Use unknown (G.S.).

**Bidens andicola** H.B.K. var. **andicola**

Colombia to Argentina.

Cuper, 3450–3810 m. Along trail, and on lightly grazed steep slope at edge of potato garden.

*hembra kiku* (Qu. from Sp., *hembra*, 'female') (G.P.) [D1347]

*kiku* (Qu.) (G.P.) [D1502]

*p'irqa* (Qu.) (G.S.) [D1347, D1502]

Made into tea to treat pneumonia (D1502) (G.S.). Flowers provide a yellow dye; plant is the female (Sp., *hembra*) counterpart of D1346 (G.P.). At different times, G.P. identified D1502 as *p'irqa* and as a *kiku* of unknown use.

Qorikancha, 3700 m. Fallow field in open area along paved road.

*kiku* (Qu.) [F341A]

Use unknown (G.S.).

**Bidens andicola** H.B.K. var. **descomposita** Kuntze

Colombia to Argentina.

Cuper, 3810 m. Herb along trail.

*macho kiku* (Qu. from Sp., *macho*, 'male') (G.P., G.S.) [D1346]

Flowers provide a yellow dye; plant is the male (Sp., *macho*) counterpart of D1347, and provides a more potent dye (G.P.) (fig. 23).



FIG. 23. N.C. gathers the flowers of *kiku* (*Bidens andicola* ssp.) to use for a yellow dye (photo CCTC).

Qorikancha, 3700 m. Fallow field in open area along paved road.

*kiku* (Qu.) [F341B, F343]

Use unknown (G.S.).

***Bidens pilosa* L.**

Neotropical.

Cuper Alto, 3800 m. Common herb on stone wall along trail.

*silk'iwa* (Qu.) [F339]

Use unknown (G.S.).

Qorikancha, 3700 m. Fallow field in open area along paved road.

*kiku* (Qu.) [F342A]

Use unknown (G.S.).

***Calendula officinalis* L.**

Native to Mediterranean region. Widely cultivated.

Cuper, 3810 m. Cultivated in house garden.

*uchu k'aspa* (Qu.) (T.H., G.S.) [K107]

Flower used as decoration. Made into tea

which is drunk to treat excessive menstrual bleeding or bleeding outside of period (G.S.).

**Chuquiraga spinosa** Less.

Southern Peru, Chile, Argentina.

Cuper, approx. 4200 m. Low shrub on steep hillside of Antakillqa at place called Atuq Pita.

*uchu k'aspa llawllicha* (Qu., *uchu k'aspa*, 'Calendula officinalis') (S.J.) [F276]  
*qhillu t'ikaq llawlli* (Qu., *qhillu*, 'yellow'; *t'ikaq*, 'flowered') (G.S.) [F276]

The plant has no use (S.J., G.S.). Flowers of plant are light orange.

**Cirsium vulgare** (Savi) Ten.

Native to Europe. Naturalized weed.

Cuper, 3600 m. Herb on hillside (D1427).

Qorimarka, Sipas Warquna ruins, 3750 m.

Herb in disturbed soil (K281).

*estrella khishqa* (Sp., *estrella*, 'star'; Qu., *khishqa*, 'spiny plant') (Am.Q., G.P.) [D1427, K281]

*alka khishqa* (Qu., *alka*, 'mark' or 'stain') suggested name (Am.Q.) [K281]

*escobilla* (Sp., 'little broom') (B.G., S.J., C.R.) [K281]

Name unknown (P.P.) [K281]

Plant has no name (G.S.) [D1427]

Plant appeared like a plague in Chinchero about eight years ago [1974], and people are pretty tired of it already, since it has a lot of spines and is of no use whatsoever (Am.Q., G.S.). To help cure nose ailments, such as bleeding or small sores inside nose, four to six flowers are soaked in clean water, then smelled in the morning (P.P.). Other suggested uses as a tea-sel (S.J., C.R.), and, taken as a tea, to sterilize women (Am.Q.). Use unknown (G.P.).

**Conyza canadensis** (L.) Cronq.

Cosmopolitan weed.

Cuper, 3330 m. Herb in old rocky field by brook.

*duraznillo* (Sp., 'small peach') suggested name [D1820]

Used as tea to treat hangovers after having drunk *trago* (Sp., 'cane alcohol') (B.G.).

**Conyza deserticola** Philippi

Peru to Chile and Argentina.

Taucca, 4050–4250 m. Steep rocky slopes.

Name and use unknown (G.A., G.S.) [D1539]

Cuper, 4500 m. Summit of hill.

*pampa sutuma* (Qu.) [D1719]

Use unknown (L.P.).

**Conyza obtusa** H.B.K.

Mexico to northern Argentina.

Q'erapata, 3800 m. Herb in old field near Ashñapuquio spring.

Name and use unknown [D1615]

Similar to *maych'a* (Qu.); sheep eat it, along with everything else (N.C., B.G.).

**Conyza primulaefolia** (Lam.) Cuatr. & Lourteig

Mexico to Chile and Argentina

Taucca, 4050–4250 m. Steep rocky slopes.

Name and use unknown [D1529]

**Cosmos peucedanifolius** Wedd.

Peru, Bolivia and Argentina.

Cuper, 3500–3600 m. Herb among rocks, grass, and shrubs on steep slopes.

*phanti* (Qu.) (N.C., B.G., G.P.) [D1669]

Entire plant used for tea; root used for fever of *costado* (Sp., 'side') (G.P.).

Sold for tea in Cuzco and Chinchero markets.

**Dahlia pinnata** Cav.

Native to Mexico. Widely cultivated and escaped.

Cuper, 3300 m. At edge of cornfield in quebrada bottom.

*puka t'ika* (Qu., *puka*, 'red'; *t'ika*, 'flower') (G.P.) [D1763]

Used for decorative purposes during rituals such as the first hoeing of potato fields in January or February (G.P.). Women wear the flowers in their hats, and then plant them in the form of a cross between the rows of potatoes. Bouquets of flowers are then given to everyone present, and flowers are exchanged between partners who dance at the field. Bouquets are selected to mix the greatest possible contrast of flower colors; the *puka t'ika* is especially valued for its deep red color and large size. Roasted guinea pigs (Qu., *cui*) must be eaten and maize beer (Sp., *chicha*) drunk to ensure a harvest of many large potatoes.

**Eupatorium cuzcoense** Hieron.

Southern Peru.

Tauca, 4050 m. Shrub in thickets along road. *hayaq maych'a* (Qu., *hayaq*, 'bitter' or 'stinging') (G.S.) [D1587]  
*maych'a* (Qu.) (M.H.) [D1587]

Plant has no use, although llamas and cows eat it (M.H.). Use unknown (G.S.). *Maych'a* are common, weedy plants, and so, for instance, a very ordinary curer is called a *maych'a paqu* (Qu., *paqu*, 'healer'), which could imply that he could be found anywhere, or that he only uses ordinary weeds in curing.

**Eupatorium pentlandianum** DC.

Peru and Bolivia.

Cuper, 3450–3550 m. Steep rocky slopes and rocks along stream above waterfall. *hayaq maych'a* (Qu., *hayaq*, 'bitter' or 'stinging') [D1472]  
*hayaq qiyuña* (Qu.) alternate name (G.P.) [D1472]

Used to rub on breasts to wean children after age two years (G.P.). Use unknown (G.S.).

**Eupatorium sternbergianum** DC.

Ecuador and Peru.

Cuper, 3700 m. Shrub along trail. *manka paki* (Qu., *manka*, 'pot'; *paki*, 'to break') [D1413]

Used as a tea for digestive ailments (G.S.). All informants agreed that although the name of this plant, 'pot-breaker,' might have referred to its use in the past, they knew of no such use.

**Eupatorium volkensii** Hieron.

Southern Peru.

Cuper, 3700 m. Shrub along trail. *suytu qhura* (Qu., *suytu*, 'long and narrow'; *qhura*, 'herb') [D1414]

Name and use unknown (G.S.) [D1414]

Use unknown (G.P.).

**Flourensia polycephala** Dillon

Southern Peru.

Urquillos. 3300 m. Woody shrub along road at place called Erapata. *fawka* (Qu.?) [F329]

Useful as firewood, as it can be used for cooking fires even when green. Leaves used to make a poultice for sprains.

**Galinsoga mandonii** Schultz-Bip.

Peru, Bolivia and Argentina.

Rajchi, 3700 m. Herb in barley field below Inca ruins.

*uq'i qhura* (Qu., *uq'i*, 'gray'; *qhura*, 'herb') (Am.Q.) [K217]

*qhuracha* (Qu., 'little herb') (B.G.) [K217]

Name unknown (P.P.) [K217]

Use unknown (B.G., Am.Q., P.P.).

**Galinsoga quadriradiata** Ruiz & Pavón

Native to Mexico. Weedy in temperate and subtropical regions of both hemispheres.

Cuper, 3300–3450 m. Herb at edge of small maize field along brook.

*p'irqa* (Qu.) [D1744]

Entire plant used as a tea to cure coughs (S.J.).

**Gamochaeta spicata** (Lam.) Cabrera

Native to South America, now a cosmopolitan weed.

Cuper, 3600–4500 m. Herb in moist fen (D1408) and on summit of Antakillqa hill (D1711, D1712).

Tauca, 4050–4250 m. Herb on steep rocky slopes (D1562).

*qhitu qhitu* (Qu.) (G.A., N.C., L.H., G.P., L.P., G.S.) [D1408, D1562, D1711, D1712]

*macho qhitu qhitu* (Sp., *macho*, 'male') (G.A., L.P.) [D1711]

*hembra qhitu qhitu* (Sp., *hembra*, 'female') (G.A.) [D1712]

The root is drunk in a tonic (local Sp., *fresco*) with *yawar ch'unqa* (Qu., *yawar*, 'blood'; *ch'unqa*, 'suck') (N.C.).

The entire plant is ground in alcohol and applied to the leg to relieve leg cramps (G.P.). Used together with lupine and *isphinhuy* (Qu.) in a poultice which is rubbed on the surface of the legs (G.P.). A tea for the *costado* (Sp., 'side') is made from the whole male plant (G.A.). The male form is said to grow into the female form (L.P.), which is made into *sankhu* (Qu., a meal) with flour of *Vicia faba*, or can be taken as a tea for lung problems (G.A.). Use unknown (L.H.).

**Gnaphalium cheiranthifolium** Lam.

Southern South America.



- Cuper, 3750 m. Herb in old field along brook.  
*wila wila pasto* (Qu.; Sp., *pasto*, 'forage') [K120]  
Use unknown (G.S.).
- Gnaphalium mandonii** Schultz-Bip.  
Southern Peru and Bolivia.  
Cuper, 3450–3550 m. Herb along creek in quebrada above waterfall.  
*qhitu qhitu* (Qu.) (B.G., G.P.) [D1474]  
A lukewarm tea made from this plant is good for the lungs (B.G.). Eaten by sheep (B.G.).
- Tauca**, 4050 m. Herb in moist soil along brook.  
*wila wila* (Qu., *wila*, 'tell') (G.S.) [D1575]  
*qiswar qiswar quracha* (Qu., *qiswar*, 'Buddleja spp. '; *qura*, 'herb') (M.H.) [D1575]  
Use unknown (G.S.). Plant has no use, except as sheep fodder (M.H.).
- Grindelia boliviana** Rusby  
Peru, Bolivia and Argentina.  
Qorikancha, 3750 m. Herb in disturbed soil.  
*chiri chiri* (Qu., *chiri*, 'cold') [K280]  
Use unknown (T.H., G.P.).
- Heliopsis buphthalmoides** (Jacq.) Dunal  
Neotropical weed.  
Cuper, 3300–3450 m. At edge of garden along brook.  
*p'irqa* (Qu.) [D1745]  
Used as a tea to cure coughs (S.J.).
- Hieracium chilense** Less. (vel sp. aff.)  
Ecuador, Chile, Peru.  
Cuper, alt. unknown. Antakillqa hillside.  
Name and use unknown [F271]
- Hieracium mandonii** (Schultz-Bip.) Arv.-Touv.  
Peru, Bolivia and Argentina.  
Tauca, 4050–4250 m. Steep rocky slopes.  
*yerba de billarga* (Sp., *yerba*, 'herb') (M.T.) [D1550]  
Plant has no name (G.S.) [D1550]  
Cuper, 3600–3900 m. Hillside.  
*wila wila* (Qu.) (L.P.) [D1690]  
*suphu suphucha* (Qu., *suphu*, 'coarse stiff hair') (B.G.) [D1690]  
This plant was declared to be of no use by all informants (B.G., L.P., G.S., M.T.). G.S. noted emphatically that the plant had no name or use and was not even eaten by animals.
- Hypochoeris chilensis** (H.B.K.) Hieron.  
Colombia to Argentina.  
Cuper, 3100–3600 m. Steep rocky slopes.  
*qhishwa pilli* (Qu., *qhishwa*, 'warm place'; *pilli* refers to the form in which the ray florets radiate from a central ring, as feathers do from a headdress) (G.P.) [K264]  
Name and use unknown (N.C., B.G.) [D1656]  
Use unknown (G.P.).
- Hypochoeris taraxacoides** (Walp.) Benth. & Hook.  
Peru to Argentina.  
Cuper, 3600–4500 m. Along trail and on summit of Antakillqa hill.  
Tauca, 4050 m. Moist soil along brook.  
Yanacona, 3750 m. Fallow field on moist pampa.  
*ch'aran pilli* (Qu., *ch'aran*, 'seepage area'; *pilli* refers to the form in which ray florets radiate from a central ring, as feathers do from a headdress) [D1407, D1574, D1589, D1629, D1708]  
*pilli pilli* (Qu.) alternate name (G.A.) [D1708]  
A tea (B.G.) for stomach problems is made from the root of this plant (G.A., M.H.). A tonic (Sp., *refresco*) (M.H.) is made from the fresh leaves (G.S.) or the entire plant with the root (G.A.). Used for pains of the waist area (L.P.). Use unknown (G.P.). All six informants agreed on the name.
- Hypochoeris** sp.  
Steep rocky slopes.  
*ch'aki pilli* (Qu., *ch'aki*, 'dry'; *pilli* refers to the form in which the ray florets radiate from a central ring, as feathers do from a headdress) not collected  
No reported use (L.H.).
- Jungia amphistipula** Cerrate  
Peruvian Andes.  
Cuper, 3500–3600 m. Steep rocky slopes.  
Name and use not recorded [D1672]
- Leucanthemum vulgare** Lam.  
Native to Eastern Europe. Widely cultivated and escaped.  
Cuper, 3330 m. Wild herb on steep wet rock slopes.

*margaritas* (Sp.) [D1808]  
Ornamental (B.G.).

**Matricaria recutita** L.

Native of Eurasia. Widely cultivated.

Cuper, 3810 m. Herb cultivated in house garden.

*manzanilla* (Sp., 'chamomile') (N.C., A.Co., G.S.) [D1397]

Used for tea as remedy for stomachache or other ailments (N.C.). Used with *toronjil* (Sp., '*Melissa officinalis*') in making *frutillada* ('strawberry beer') (N.C.). Plant has no Quechua name. Sold in Chinchero Sunday market.

**Munnozia lyrata** (Gray) H. Robinson & Brettell  
Peru.

Cuper, 3370–3700 m. In open areas along steep trail.

*khana* (Qu.) [D1418]

Name and use not recorded [D1735]

Name unknown (G.P.).

**Mutisia acuminata** Ruiz & Pavón

Peru, Bolivia and Argentina.

Cuper, 3700 m. Along trail.

*chinchirkuma* (Qu.) [D1419]

Use unknown (G.P.).

**Mutisia cochabambensis** Hieron.

Peru and Bolivia.

Cuper, 3500–3900 m. Climbing vine at edge of field on steep hillside.

*wayrakuma* (Qu., *wayra*, 'wind') (L.P.) [D1688]

Name and use unknown (G.P.) [K288]

One informant (L.P.) told us that he makes a tea from the leaves of this plant and drinks it every day for his general health.

**Onoseris albicans** (D. Don) Ferreyra

Peru.

Pirqa Kachun, 3000–3300 m. On dry hillside.

*wira q'uyá* (Qu.) (P.P.) [K301]

*puna san borgue* (Qu.-Sp., 'St. Borja of the puna') (C.R.) alternate name [K301]

*phanti phanti* or *k'ita phanti* (Qu., *k'ita*, 'wild') (U.I.) possible name [K301]

Name and use unknown (B.G.) [K301]

*Wira q'uya* is burned inside the sheep corral with *ch'ira de ají* (Qu., *ch'ira*, 'seeds'; Sp., *de ají*, 'of hot peppers'); the smoke is said to prevent sheep from running too much (P.P.). *Wira*

*q'uya* is burned along with alpaca fat in *despacho* (Sp.) ceremonies to dismiss fright or trauma (L.P.). Use unknown (C.R.).

**Oritrophium hieracioides** (Wedd.) Cuatrec.

Peru and Bolivia.

Tauca, 4000–4250 m. Herb on cliff faces, steep rocky slopes, and lightly grazed draws.

Name and use unknown (G.S.) [D1529, K184]

**Paranephelius uniflorus** Poeppig & Endl.

Peru.

Yanacona, 3750 m. Herb in fallow field on seasonally inundated pampa (D1620).

Cuper, 4500 m. Herb on summit of hill (D1724).

*pachakuti* (Qu., *pacha*, 'earth'; *kuti*, 'turn around') (G.A., G.P., G.S.) [D1620, D1724]

Tauca, 4050–4250 m. On steep rocky slopes, and in moist soil along brook in community center.

*q'ara maransiras* (Qu., *q'ara*, 'skin') (G.S.) [D1537]

*q'ara pilli* (Qu., *q'ara*, 'skin'; *pilli* refers to the form in which the ray florets radiate from a central ring, as feathers do from a headdress) (G.S.) [D1577]

Use unknown (G.A., L.H., G.S.).

**Perezia coerulescens** Wedd.

Peru, Bolivia and Argentina.

Tauca, 4000–4200 m. Herb on cliff faces and lightly grazed draws.

Name and use unknown (G.S.) [K187]

**Perezia multiflora** (H.B.K.) Less.

Colombia to Argentina.

Tauca, 3900 m. Herb on side of trail.

Name and use unknown (G.S.) [K180]

**Perezia pinnatifida** (Humb. & Bonpl.) Wedd.

Ecuador to Bolivia.

Cuper, 4500 m. Summit of Antakillqa hill.

Tauca, 4200–4500 m. Among *ichus* (Qu., 'high-altitude grasses') in puna above community.

*sutuma* (Qu.) [D1703, F369]

Informants disagreed about the gender of this plant. L.P. identified it as female (Sp., *hembra*), noting that the roots, leaves, and flowers are boiled to make a tea for stomach ailments. G.A.

called it male (Qu., *urquña*) and said that a tea is made from the whole plant for coughs. B.G. gave it no gender and said that only the root is used to treat *fiebre del costado* (Sp., 'fever of the side'). Use unknown (*F369*) (G.S.). The plant is sold by local vendors in the Chinchero Sunday market.

***Perezia pungens* (Humb. & Bonpl.) Less.**

Colombia to Bolivia.

Cuper, 3500–3900 m. Herb on steep rocky slopes of Antakillqa hillside.

*sutuma* (Qu.) [*D1648, D1693, K285*]

This plant (*D1648, D1693*) is male (Sp., *macho*; Qu., *urquña*) (G.P., L.P.). The leaves and flowers are used for tea (G.P.); the large root is used to make a tea for fever (L.P.). The leaves are used in the same way as *manzanilla* (Sp., '*Matricaria recutita*') in tea, or as a tonic (Sp., *refresco*). It is taken as a tea, for breakfast (N.C., B.G.) and for ailments of the stomach and the side (G.P., L.P., C.R.). Similar to *yerba de billarga* (Sp.?) (B.G.).

***Schkuhria pinnata* (Lam.) Kuntze**

Peru, Chile, Argentina, Colombia, Ecuador, Bolivia.

Uychu, approx. 3600 m. Erect herb at place called Suntur Muqu, next to road and river.

*kanchalawa* (Qu.) [*F322*]

For use to treat excessive sleeping, boil the plant in the evening, then give it to children in the morning (G.S.). When boiled, the water becomes very bitter, so that one has to add a lot of sugar to get children to drink it (G.S.).

***Senecio calcensis* Cabrera & Zardini**

Peru.

Cuper, 3350–3550 m. Herb on hillside (*D1770*) and steep bank in quebrada above Puqupuq waterfall (*D1481*)

*ambrosacha* (Qu., from Sp. *ambrosia*) (G.P.) [*D1770*]

*suka rura* (Qu.) (G.P.) [*D1481*]

Name and use unknown (G.S.) [*D1481*]

Use unknown for either specimen (G.P.).

***Senecio erosus* Wedd.**

Peru and Bolivia.

Taucca, 4000–4200 m. On side of cliff.

*tiqllay warmi* (Qu., *warmi*, 'woman')

[*K195*]

Drunk in tea to treat pain in the kidneys (G.S.). Sold by local vendors in the Chinchero Sunday market.

***Senecio herrerae* Cabrera**

Peru and Bolivia.

Ch'usu, 3800 m. Herb in disturbed soil along trail (*K273*).

Cuper village center, 3810 m. On stone wall near spring (*K110*).

*q'armatu* (Qu.) (U.I.) [*K273*]

*paya paya* (Qu., *paya*, 'little old lady') suggested name (G.S.) [*K110*]

*china china* (Qu., *china*, 'female') suggested name (C.R.) [*K110*]

Use unknown (U.I., G.S., C.R.).

***Senecio modestus* Wedd.**

Peru and Bolivia.

Taucca, 4000–4200 m. Herb on cliff face.

*qhitu qhitu* (Qu.) (B.G.) [*K186*]

Name and use unknown (G.S.) [*K186*]

Use unknown (B.G.).

***Senecio parvocapitatus* Cabrera**

Southern Peru.

Cuper, 3810 m. Along trailside.

*llamaq mikhuna maych'a* (Qu., *llamaq*, 'llama's'; *mikhuna*, 'food') [*D1354*]

Eaten by llamas, burros, and sheep; boiled and rubbed on the body for aches (G.P.).

***Senecio rudbeckiifolius* Meyen & Walp.**

Peru and Bolivia.

Cuper, 3700 m. Antakillqa hillside.

*llamaq mikhuna maych'a* (Qu., *llamaq*, 'llama's'; *mikhuna*, 'food') [*D1428*]

*hayaq maych'a* (Qu., *hayaq*, 'bitter' or 'stinging') (G.S.) [*D1428*]

Used for llama food (G.P.).

Q'erapata, 3800 m. Shrub on top of adobe wall.

*hayaq maych'a* (Qu., *hayaq*, 'bitter' or 'stinging') [*D1606*]

*puka tulluq maych'a* (Qu., *puka*, 'red'; *tulluq*, 'stemmed') (N.C., B.G.) [*D1606*]

For use to cure dislocations, plant is ground to extract juice that is rubbed

on affected part or tied on with a rag  
(N.C., B.G., G.S.).

**Senecio spinosus** DC.

Peru, Bolivia and Argentina.

Tauca, 3900–4500 m. Shrub in open on  
grazed slopes below cliff faces and in flat  
area of cold puna.

*k'anlli* (Qu.) [K181]

Name and use unknown [F307]

Use unknown (B.G., T.H.). Possible use  
of whole plant in warm water for  
headache (B.G.). Similar to *k'anlli*  
(F307) (Je.C., G.S.).

**Sigesbeckia jorullensis** H.B.K.

Pantropical weed.

Cuper, 3300–3750 m. At edge of old field along  
brook.

*asñaq qhura* (Qu., *asñaq*, 'smelly'; *qhura*,  
'herb') (Am.Q., G.S.) [K116]

*khanan khanan qhura* (Qu., *qhura*, 'herb')  
(B.G.) [K116]

*uq'i qhura* (Qu., *uq'i*, 'gray'; *qhura*, 'herb')  
possible name (P.P.) [K116]

*manka p'aki* (Qu.) possible name  
(P.P.) [K116]

Name unknown (S.J.) [D1748]

The plant is collected and fed to guinea  
pigs (Qu., *cui*) (B.G., S.J., Am.Q.,  
P.P., G.S.).

**Sonchus asper** (L.) Hill

Cosmopolitan weed, native of Europe.

Yanacona, 3750 m. On edge of potato garden  
on pampa.

Cuper, 3100–3150 m. On somewhat dry slope  
with large rocks.

*khishqa khana* (Qu., *khishqa*, 'plant with  
spines') (B.G., G.P.) [D1641, K265]

Whole plant is used in a tea (N.C., B.G.)  
with tonic (Sp., *fresco*) effects (S.J.).  
Use unknown (G.P.).

**Sonchus oleraceus** L.

Cosmopolitan weed, native of Europe.

Cuper, 3450–3550 m. Along stream in que-  
brada above Puququ waterfall.

*llampu khana* (Qu.) (G.S., G.P.) [D1492]

*upa khisa* (Qu., *upa*, 'mute'; *khisa*, 'thorn')  
suggested alternate name (G.S.)  
[D1492]

Entire plant used to make juice to drink  
(G.P.). Use unknown (G.S.).

**Stevia macbridei** B. L. Robinson var. *anomala* B.  
L. Robinson

Peru.

Yanacona, 3800 m. Herb among rocks on dry  
pastured slopes.

*pata kaqra* (Qu.) [K126]

Name and use unknown (Am.Q., P.P.,  
G.S.) [K126]

Used only as kindling and fuel for kitchen  
fires (B.G.). Animals will not eat it  
because of its foul odor (P.P.) (fig.  
24).

**Stevia rhombifolia** H.B.K. var. *stephanacoma*  
Schultz-Bip.

Colombia to Bolivia.

Cuper, 3100 m. Herb in moist maize garden.  
*manka p'aki* (Qu., *manka*, 'pot'; *p'aki*,  
'break') (B.G., Am.Q., G.S.) [K251]

*p'irqa* (Qu.) (P.P.) [K251]

Roots used for stomachache; leaves  
steeped in a tea as a remedy for vom-  
iting (Am.Q., G.S.). Used as a tea  
(P.P.).

**Tagetes multiflora** H.B.K.

Colombia to Argentina.

Q'erapata, 3800 m. Weedy herb at edge of  
field along road.

*chiqhipa* (Qu.) [D1608]

A condiment for cooking (*asñaqa*, Qu.,  
'having smell') (G.S.). Used to treat  
stomachache (B.G.). Sold in Chinch-  
ero Sunday market, but less desir-  
able than *wakatay* (*Tagetes terni-  
flora*) or other condiments.

Qorikancha, 3700 m. Fallow field along paved  
road.

Name and use unknown [F342C]

**Tagetes terniflora** H.B.K.

Colombia to Argentina.

Cuper, 3810 m. Cultivated in house garden.  
*wakatay* (Qu.) (T.H., G.S.) [K100]

Condiment used in cooking, especially to  
stuff guinea pigs before roasting and  
in maize soup (G.S.). Sold in  
Chinchero and Cuzco markets.

**Tanacetum parthenium** (L.) Schultz-Bip.

Native to the Balkan Peninsula. Widely cul-  
tivated.

Cuper, 3810 m. Herb cultivated in house gar-  
den.

*santa mayra* (local Sp., Santa Maria) (T.H.,  
G.S.) [K103]



FIG. 24. Children carry kindling after a day with flocks or in fields, never going home empty-handed. Guinea pig droppings are the primary fuel in homes that have not yet converted to kerosene stoves, but all homes maintain supplies of dried brush to start and enliven cooking fires (photo C.S.).

Used for intestinal obstruction (Sp., *cólicos*) and *desmantu* (Qu. from Sp., *desmandado*), described as waist-level backache from exhaustion (G.S.).

***Taraxacum officinale*** G. Weber ex Wiggers  
Cosmopolitan weed.

Cuper, 3810 m. Weedy herb along trail.

*charanpilli* (Qu., *charan*, 'wet place'; *pilli* refers to the form in which the ray flo-

rets radiate from a central ring, as feathers do from a headdress) [D1371]

Roots used for a tea to treat ailments of *inflamación* (Sp., 'inflammation'), *corazón* (Sp., 'heart'), and *mal de hígado* (Sp., 'liver problems') (G.P.).

***Verbesina pflanzii*** Perkins  
Peru and Bolivia.

- Pirqa Kachun, 3000–3300 m. Abundant herb along trail on dry hillside.  
Name and use unknown (B.G., Am.Q., P.P., G.S.) [K298]  
*winku winku* (Qu.) possible name (C.R.) [K298]  
Use unknown (B.G., Am.Q., P.P., C.R., G.S.). Similar to *sunchu* (Am.Q., G.S.).
- Viguiera pazensis** Rusby  
Peru and Bolivia.  
Cuper, 3450–3500 m. At edge of potato field on lightly grazed slopes above waterfall.  
*sunch'u* (Sp., *sunchu*, 'Composite sp.') [D1498]  
Used as fodder for cows and guinea pigs (Qu., *cuñ*) (G.S.).
- Viguiera procumbens** (Pers.) S.F. Blake  
Peru, Bolivia, Argentina, Chile.  
Cuper, 3100 m. On side of trail.  
*sunch'u* (Sp., *sunchu*, 'Composite sp.') [K248]  
Use unknown (G.P.).  
Yanacona, 3800 m. Herb near buildings.  
*sunchus* (from Sp., *sunchu*, 'Composite sp.?'; pronunciation varies to *sunchu*) (G.A., G.S.) [D1675]  
*manka paki* (Qu., *manka*, 'pot'; *paki*, 'break') (N.C., B.G.) [D1675]  
Leaves are fed to guinea pigs (G.A., G.S.).  
Use unknown (N.C., B.G.).
- Vilobia praetermissa** Strother  
Peru and Bolivia.  
Cuper (Huancapata), 3850 m. Herb in grazed and disturbed soil along trail.  
*pampa anis* (Qu., *pampa*, 'flat open place'; Sp., *anis*, 'anise') [K176]  
Leaves can be used to make a tea (G.P.).  
After eating something cold in the countryside, people sometimes chew this sweet plant as they do coca (T.H.). Sold in the Chinchero Sunday market.
- Werneria nubigenia** H.B.K.  
Mexico, Guatemala, Andean South America.  
Cuper, 3600–3900 m. Low herbs in clumps on open hillside of arable land in place called K'inqupata.  
*cebolla cebolla* [F353]  
Plant has no use (M.C., S.J., T.L., G.S.).  
Plant may be biennial (G.S.).
- Werneria pygmaea** Gillies  
Tauca, 5000 m. Community border with Calca. Among *ichus* on open puna.  
*margaritas* (Sp., 'daisies') [of some kind] suggested name [F363]  
Plant has no use (E.C., Au.Q., G.S., J.S.).
- Werneria staticaefolia** Schultz-Bip.  
Peru.  
Tauca, 4050–4250 m. Steep rocky slopes.  
*cebolla cebolla* (Qu., from Sp. *cebolla*, 'onion') [D1547]  
Name and use unknown (G.S.) [D1547]  
Use unknown (L.H.).
- Werneria strigosissima** A. Gray  
Cuper Alto, 4600 m. Among *ichus* (Qu., 'high-altitude grasses') in flat open area called Margaritayuq.  
Name and use unknown [F315]
- Werneria villosa** A. Gray  
Peru and probably adjacent Bolivia.  
Tauca, 5000 m. Community border with Calca. Among *ichus* (Qu., 'high-altitude grasses') on open puna.  
*margaritas* [of some kind] (Sp., 'daisies') [F364]  
Name and use unknown [F365]  
Use unknown [F364] (E.C., Au.Q., G.S., J.S.). All said that F365 was a plant they had never seen before (E.C., Au.Q., G.S., J.S.).
- Zinnia peruviana** (L.) L.  
Native of Mexico. Neotropical weed.  
Pirqa Kachun, 3000–3300 m. Herb along trail on dry hillside.  
*yuyay hapichinkiy t'ika* (Qu., 'thought flower') [K306]  
*mayu yawar ch'unqa* (Qu.) suggested name (C.R.) [K306]  
*puka t'ika qhurachata* (Qu.) possible name (B.G.) [K306]  
*qhishwa aya t'ika* (Qu.) possible name (B.G.) [K306]  
Name and use unknown (P.P.) [K306]  
Use unknown (B.G., Am.Q., C.R., G.S.).  
The Quechua name is a literal translation of *pensamiento* (Sp., 'thought'), as zinnias are locally called in Spanish. The informant may have improvised the Quechua name when asked.

**Genus and species indet.**

Cuper, 3600–3900 m. Herb on Antakillqa hillside.

*maransiras* (Qu.) [D1697]

Greens are used as herb in salads and soups or can be ground into hot sauce. This is a favorite food of the informant (L.P.). Sold by local vendors in the Chinchero Sunday market.

**Genus and species indet.**

Cuper, 4500 m. Herb at summit of Antakillqa hillside, place called Kuntur Tiana.

*maransiras* (Qu.) [F275]

Said never to flower. Whole plant is ground up to be eaten in hot sauce (Qu., *uchukuta*), or in freeze-dried potato soup (Qu., *chunu lawa*) made with *saqtacha* (Qu., *chunu* which is chopped up and boiled in processing.) Smells like *cilantro*.

**CONVOLVULACEAE*****Cuscuta corymbosa* Ruiz & Pavón**

Central and southern Peru.

Cuper, 3600–3900 m. Parasitic vine on shrubs on hillside.

*willq'u* (Qu.) [D1682]

Name and use unknown (G.A., B.G.) [D1682]

Informant (L.P.) insisted that this offensive-tasting plant had no use whatsoever.

***Cuscuta globiflora* Engelm.**

Southern Peru to Argentina.

Cuper, 3100 m. Parasitic vine climbing on herbs in small moist maize field.

*willk'u rojo* (Qu.; Sp., *rojo*, 'red') (P.P.) [K247]

*willk'u* (Qu.) (B.G.) [K247]

Useful to treat kidney ailments (P.P.). The whole plant is 'toasted' (heated without water) and used as a poultice for pains in the waist area (P.P.). Considered a very hot plant (P.P.). Like *allka khishqa* and *ruda*, which cause abortion, this plant can be used to make a tea to make women sterile (Am.Q., G.S.).

***Dichondra sericea* Sw.**

Mexico to Costa Rica, Ecuador, Peru, Brazil, Argentina and Chile.

Q'era-pata, 3800 m. Creeping herb forming mats in moist seepage area.

*winku winku* (Qu.) [D1613]

A tea prepared by steeping the leaves is drunk to cure kidney problems (N.C., B.G., G.S.).

***Ipomoea minuta* R. E. Fries**

Peru and Bolivia.

Pirqa Kachun, 3750 m. On open grazed hillside.

*leche leche* (Qu. from Sp., *leche*, 'milk') [K295]

*ñuñupunqa* (Qu., *ñuñu*, 'breast') possible name (C.R.) [K295]

Sweet tuber is eaten, especially by children (U.I.).

***Ipomoea piurensis* O'Don.**

Guyana, Venezuela, Brazil, Ecuador and Peru.

Cuper, 3300 m. Vine on stone wall at edge of small maize field.

*wilk'u* (Qu.) [D1759]

Use unknown (G.P.).

**CRASSULACEAE*****Echeveria* aff. *chiclensis* (Ball) Berger (or sp. nov.)**

Pirqa Kachun, 3000–3300 m. Erect succulent on Inca stone wall.

*luraypu* (Qu., 'diamond shape') [K296]

Use unknown (S.J., C.R., G.S.).

***Echeveria* aff. *peruviana* Meyen**

Southern Peru to Chile and Argentina.

Cuper, 3700 m. Succulent herb along trail.

*luraypu* (Qu., 'diamond shape') [D1415]

Leaves chewed to alleviate thirst (S.J., G.S.).

***Villadia virgata* (Diels) Baehni & J.F. Macbr.**

Central and southern Peru.

Cuper, 3330–3600 m. Herb on steep wet rocks and on rocks in place called Wayraq Punku.

Name and use unknown [F263]

Name and use not recorded [D1811]

Pirqa Kachun, 3000–3330 m. Erect on Inca wall.

*kunquña* (Qu.) (Am.Q., P.P., G.S.) [K297]

*kuychi kuychi* (Qu.) (C.R.) [K297]

To treat a headache, this plant is boiled in an *olla* (Sp., 'globular cooking pot') and used to wash the head (P.P.).

Head problems may be caused by the wind; for instance if your ears ring, washing with this plant will make it stop (P.P.). The juice squeezed out after rubbing this plant can be used to treat toothaches (Am.Q., G.S.). Plant has no use (C.R.).

## CRUCIFERAE

**Brassica aff. B. nigra** (L.) W.D. Koch or **B. juncea** (L.) Czern.

Both native of Old World.

Cuper, 3450–3500 m. Herb on lightly grazed slopes above waterfall.

*mostaza* (Sp., 'mustard') [D1500]

Seeds are ground for use as a condiment (G.S.). G.S. later denied that use, but suggested that the fruit are used to cure fever.

**Brassica campestris** L.

Native of Old World.

Cuper, 3810 m. Common herb by trailside.

*nabo* (Sp., 'turnip') [D1341]

*llullu* (Qu., 'greens') [D1341]

*urqun sangra sangra* (Qu., *urqun*, 'male') (T.L.) [F298]

Cooked as a green in *llullu hawch'a* (Qu.), a dish of greens, onions, and mashed potatoes. Use unknown (T.L.).

**Capsella bursa-pastoris** (L.) Medikus

Native of Old World, now a widespread American weed.

Cuper, 3810 m. Herb along trail.

*uq'i uq'i* (Qu., *uq'i*, 'gray') (G.P.) [D1367]

*arequipa pasto* (Sp., *pasto*, 'fodder'; Arequipa refers to the Peruvian city) (G.S.) [D1367]

Use unknown (G.P., G.S.).

**Descurainia myriophyllum** (Willd.) R. E. Fries

Colombia to Peru.

Yanacona, 3810 m. Herb on rock outcrop.

Cuper, 3350–3500 m. Herb on hillside.

*sangra sangra* (Qu.) (G.P., G.S.) [D1404, D1776]

*ashña qhura* (Qu.) possible name (Al.Q.) [D1404]

Capsules are used medicinally, possibly to treat pneumonia (G.S.). Use unknown (G.P., Al.Q.).

**Descurainia titicacensis** (Walp.) Lillo

Southern Peru to Argentina.

Cuper, 3810 m. Herb along trail near community center.

*sangra sangra* (Qu.) [D1362]

Used for kidney problems (G.P.). Boiled with *capulí* (*Prunus serotina* ssp. *capulí*) and *jora de chicha* (Sp., 'maize sprouted for making beer'), this plant is used to bathe children when they have diarrhea (N.C.).

**Draba aff. D. cuzcoensis** O. E. Schulz vel sp. nov.

Known only from Cusco, Peru.

Yanacona, 3800 m. Herb forming rosettes among rocks on dry pastured slopes of Tititqachimpa.

*michi michi* (Qu., *michi*, 'cat') (B.G.) [K127]

*bolsa bolsa* (Qu., from Sp. *bolsa*, 'bag') (P.P.) [K127]

Name and use unknown (Am.Q., G.S.) [K127]

Plant has no use (B.G., P.P.). G.S. made the unusual statement that he had never seen this plant before.

**Draba** sp. nov.?

Known only from Chinchero.

Taucca, 4050–4250 m. Herb forming rosettes on steep rocky slopes.

Name and use unknown (G.S.) [D1558]

**Lepidium bipinnatifidum** Desv.

Colombia to Bolivia.

Q'erapata, 3800 m. Herb in disturbed soil at edge of field.

Yanacona, 3750 m. Herb in inundated rows of fallow potato field on moist pampa.

*chichira* (Qu.) [D1619, D1607]

Said to be poisonous to guinea pigs, but not to cattle, who may eat it (G.S.). To treat *phiru* (Qu., an illness caused by contact with 'the Ancients,' with symptoms of joint aches), the plant is pounded with a stone and rubbed on legs or other affected area (B.G.).

**Nasturtium officinale** R. Br.

Cosmopolitan weed, native of Old World.

Cuper, 3100–3600 m. Herb in moist fen (D1410), on moist rocks near stream in quebrada (K253), in dry watercourse on hillside (D1778).

Q'erapata, 3800 m. Herb in wet seepage area of Ashnapuquio (D1610).



Pukamarca, 3800 m. Herb at edge of small stream in fields by Lake Piuray (K174). *mayu mostazilla* (Qu., *mayu*, 'running water'; Sp., *mostazilla*, 'little mustard') (G.P., G.S.) [D1410, D1610, D1778, K174, K253]  
*michi michi* (Qu., *michi*, 'cat') (G.S.) [D1410]  
Name and use unknown (N.C., B.G.) [D1610]  
*ch'apu ch'apu* (Qu.) possible name (N.C., B.G.) [D1610]  
Cooked and eaten as a main course dish (G.S., G.P.). Not eaten raw.

#### **Raphanus sativus L.**

Native to Europe and Eastern Asia; widely cultivated.  
Cuper, 3750 m. Cultivated in sector of fields called Waqkata.  
*rabanos* (Sp., 'radishes') [F330]  
Unsuccessfully cultivated with carrots in corner of *habas* field; broadcast and never thinned.

#### **Sisymbrium aff. oleraceum O. Schulz**

Peruvian Andes.  
Cuper, 3450–3500 m. Herb on lightly grazed slopes above Puqpuq waterfall.  
*mayu mostazilla* (Qu., *mayu*, 'running water'; Qu., diminutive from Sp. *mostaza*, 'mustard') [D1513]  
Use unknown (G.P.).

#### **Sisymbrium peruvianum DC.**

Peru, Bolivia.  
Cuper, 4500 m. Low herb in narrow quebrada in place called Qoriwayrachina.  
Name and use unknown [F314]

#### **CUCURBITACEAE**

#### **Cyclanthera brachybotrys (Poeppig & Endl.) Cogn.**

Colombia to Bolivia.  
Cuper, 3300–3450 m. Wild vine along edge of garden by brook (D1750) and on steep hillside (K214).  
*achuqcha* (Qu.) (G.P.) [K214]  
*k'ita achuqcha* (Qu., *k'ita*, 'feral') (G.S.) [D1750]  
*q'utu q'utu* (Qu., *q'utu*, 'round lump,' such as goiter) alternate name (S.J.) [D1750]  
Green fruits of this wild plant are sold in the Cusco market to be eaten in

salads. Fruit is made into a tea to be drunk for belly ailments (S.J.).

#### **Sicyos baderoa Hook. & Arn.**

Ecuador to Chile.  
Q'erapata, 3800 m. Dense vine on adobe wall.  
*putaqllanku* (Qu.) [D1601]  
Long lengths of this vine are wound around the necks of dancers during *Carnaval*, although increasingly being replaced by store-bought paper ribbons. The entire plant is boiled and used for bathing, or the leaves may be rubbed together and then rubbed on the body (G.S.). Used as a tonic (Sp., *refresco*) (B.G.).

#### **CUNONIACEAE**

#### **Weinmannia producta Moric. ex DC.**

Central and southern Peru.  
Cuper, 3360 m. Tree above Puqpuq waterfall.  
Name and use not recorded [D1792]  
The tree showed evidence of trimming for firewood.

#### **CYPERACEAE**

#### **Cyperus hermaphroditus (Jacq.) Standley**

Widely distributed in tropical America.  
Cuper, 3100 m. Somewhat dry slope among large rocks.  
*muqu muqu* (Qu., *muqu*, 'knot' or 'joint') [K252]  
Use unknown (G.P.).

#### **Cyperus sesleroides H.B.K.**

Venezuela to Argentina.  
Cuper, 3500–3600 m. Sedge on grassy, somewhat scrubby, steep rocky slopes.  
*urqu pasto* (Qu., *urqu*, 'hill'; Sp., *pasto*, 'fodder') suggested name [D1651]  
*pastucha* (Sp., *pasto*, 'fodder'; Qu., *-cha*, 'little') description (N.C., B.G.) [D1651]  
Animal browse (G.A., N.C., B.G.).

#### **Scirpus californicus (Mez) Steudel**

Southwestern United States south to Argentina.  
Ayllu Punqu, 3800 m. Floating in clumps in lake.  
*khuyu* (Qu.) (S.J., G.P., G.S.) [D1639]  
*tatora* (Qu.) (B.G.) suggested name [D1639]  
Use unknown (B.G., S.J., G.P., G.S.).  
Similar to *sima* (Qu., *Festuca* sp., *Poa* sp.) but grows in lakes (G.S.).

## DIOSCOREACEAE

### *Dioscorea ancashensis* Knuth

Central and southern Peru.

Cuper, 3840 m. Herb in thin soil by large rock outcrop.

*intiq papan* (Qu., *intiq*, 'sun's'; *papan*, 'potato') (G.P.) [K145]

Name and use unknown (B.G., P.P.) [K145]

Use unknown (G.P.).

### *Dioscorea incayensis* Knuth

Andes of Peru.

Cuper, 3150 m. Vine on shrubs among large rocks on steep, somewhat dry hillside.

*ambar ambar* (Qu. from Sp., *ambar*, 'amber') [K261]

Use unknown (G.P.).

### *Dioscorea piperifolia* Humb. & Bonpl. ex Willd.

Colombia to Peru and Brazil.

Cuper, 3600 m. Climbing vine along trail; scandent vine on steep slopes.

*ambar ambar* (Qu. from Sp., *ambar*, 'amber') (G.P.) [D1457, D1489]

*wilq'u* (Qu.) possible name (G.S.) [D1457]

Name and use unknown (G.S.) [D1457]

Use unknown (G.P.).

## ELAEOCARPACEAE

### *Vallea stipularis* L.f.

Colombia to Bolivia.

Cuper, 3800 m. Woody shrub on dry grazed hillsides (D1447).

Ayllu Punqu, 3800 m (K140).

*sullullumay* (Qu.) (B.G., Am.Q., G.S.) [D1447, K140]

*chiqllumay* (Qu., *chiqllyuy*, 'to choose') (Au.Q.) [D1447]

*chiqllyurway* (Qu.) alternate name (P.P.) [K140]

*canela* (Sp., 'cinnamon') (A.Ca.) [D1447]

The wood is useful for housebuilding and as firewood (A.Co., T.H., G.S.). Foliage is boiled and used to wash the body if it becomes stiff, or to treat rheumatism (Am.Q., P.P., Au.Q., G.S.). Use unknown (A.Ca., B.G.).

## ERICACEAE

### *Pernettya prostrata* (Cav.) DC.

Costa Rica, Venezuela to Chile.

Tauca, 4050–4250 m.

Cuper, 3600–3900 m. Shrub on steep rocky slopes, woody shrub on Antakillqa hillside (D1543, D1688). Spreading, creeping herb among short grasses and mosses on rocky soil of Antakillqa hillside, above placed called Unu Urphuyuq (F304).

*macha macha* (Qu., *macha*, 'drunken') (B.G., L.H., L.P.) [D1543, D1686, F304]

*macha macha* (Qu., *macha*, 'drunken') suggested name [F357]

Name and use unknown (G.S.) [D1543, F357]

The berries are used to make you 'drunk,' for fun (B.G., L.H., L.P.). F304 and F357 were said by M.C., T.L., and G.S. not to be intoxicating, although they noted that children eat the berries.

## ERYTHROXYLACEAE

### *Erythroxylum coca* Lam.

Ecuador to Bolivia, Andean foothills.

Imported from Quillabamba area, Dept. of Cusco. Sold in markets.

*coca* (Qu.) not collected

Coca leaf is chewed on a daily basis by both male and female adult residents of Chinchero; its use is decreasing among younger adults. Leaves are kept in the mouth for up to an hour with the occasional addition of small pieces of *llypta* (Qu.), an alkaline admixture. *Llypta* is made locally from the ashes of combinations of plants generally including *tayñu* (Qu., the terminal flower clusters of *Puya werbaueri*) (figs. 25–28). Every year between March and June, shepherds on the hillsides collect and prepare *tayñu* along with fragrant plants such as *asul ñuqchu* (*Plumbago coerulea*), *tayanqa* (*Baccharis tricuneata*), *suytu suytu* (*Eupatorium* sp.), and *isphinhuy* (e.g. *Aristeguietia* (*Eupatorium*) *discolor*). For example, the large *Puya* inflorescences may be formed into a pyramid and burned